The RUBBER AGE

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LATE NEWS of the Industry

Raybestos-Manhattan, Inc., Reports Net Of $1,156,770 During Year of 1930

THE preliminary annual report of Raybestos-Manhattan, Inc., for the year ended December 31, 1930, shows net income of $1,156,770, equivalent to $1.71 per share on the 675,927 shares of no-par value capital stock outstanding. This compares with net income of $3,206,293 or $4.74 a share earned in 1929 and with net income of $2,465,585 or $3.64 earned in 1928.

Net income for 1930 was arrived at after making all provisions for inventory adjustments and similar items amounting to $327,364 for depreciation of properties amounting to $550,344, federal income taxes of $109,736 and crediting $300,000, no longer required, of the reserve set up in prior years for inventory adjustments. Earnings comparisons for 1929 and 1928 include the figures of predecessor companies.

Net sales of Raybestos-Manhattan, Inc., for 1930 total $16,683,243, compared with $23,047,511 in 1929 and $22,194,866 in 1928.

As of December 31, 1930, the company had current assets of more than $8,300,000, of which approximately $3,300,000 was cash and marketable securities. The company had no bonds or bank indebtedness, its only liabilities, aggregating $533,000, being current accounts payable and provision for taxes. The ratio of current assets to liabilities was 15.6 to 1 compared with 8.7 to 1 at the beginning of the year.

The directors declared the usual quarterly dividend of 65 cents per share, payable March 16, to stockholders of record February 28.

Automobile Parts-Accessory Business Has Sharp Upturn Since First of Year

MANUFACTURERS of parts and accessories for original equipment have had to speed up production to take care of heavier demands from the car plants and nice gains in business were reported for both January and February, according to the Motor and Equipment Association, which includes several rubber manufacturers in its membership.

With this group of suppliers leading the way in the current improvement noticeable in the parts industry, manufacturers of shop equipment and tools have also enjoyed increased business. Shipments of replacement parts to the trade in January and February were practically unchanged from December.

The grand index of shipments for all groups of manufacturer members reporting their figures to the Association for January stood at 84% of the January 1925 base index of 100 as compared with 69 in December, 72 in November and 132 in January, 1930.

Kelly-Springfield Tire Company Loss Is Reported as $3,796,054 for 1930

THE financial report of the Kelly-Springfield Tire Company for the year ended December 31, 1930, shows a net loss of $3,796,054 after interest, depreciation, inventory write-downs and reserves. This compares with net losses after deductions of $1,346,418 during 1929 and $2,490,513 during 1928.

The net deficit at the end of the year was reported as $9,162,130 as against a deficit of $5,366,075 at the close of 1929. Current assets on December 31 were $9,315,529 as against current liabilities of $701,708.

The large loss sustained for the year is the result, according to the report to stockholders, of a great many factors, some of which are incident to the period of depression through which business in general is passing while others arose from problems peculiar to the industry of which the company is a part. In line with the decline in raw materials generally, crude rubber and fabric market prices underwent a gradual decline throughout the past year. This resulted in write-offs of raw materials and finished goods inventories during and at the end of the year, amounting to more than $1,500,000, all of which has been treated as a charge to operations.

It was also considered advisable to create, and charge operations with, a further reserve amounting to $760,000 for commitments in crude rubber and fabric, for which purpose market prices as of February 7, 1931, have been used as a basis, such prices being lower than the market at December 31, 1930. A similar reserve, amounting to $425,000, which was created at the end of 1929, was credited to operations at the end of the year 1930. In addition to the foregoing, a further reserve was created and charged against the operations for the year, for possible

losses in accounts receivable and investments, amounting to $480,000.

H. B. Delapierre, treasurer of Kelly-Springfield Tire Co., says in part: "The illness of Samuel Woolner, Jr., which for some weeks past has prevented the continuance of his duties as president, has now compelled him to announce his withdrawal from all business activity whatsoever and to tender his resignation as director, chairman of the board and president. His successor has not yet been selected.

"Representatives of large amounts of both the preferred and common stocks of your company have conferred on the election of a new board of directors and have unanimously agreed on the following gentlemen, who will be proposed for election at the annual meeting on March 10, 1931: W. M. Flook, president of American Brown Boveri Electric Corp.; John Hancock, of Lehman Brothers; Byron E. Hepler, vice president and treasurer of Hope Engineering Co.; Frank W. Main, of Main & Co.; M. B. Muxen, president of Tokheim Oil Tank & Pump Co.; J. K. Newman, president Newman, Saunders & Co., Inc.; J. S. Patterson, president of Enamel Metals Co.; Stephen Peabody, Arthur Sachs of Goldman, Sachs & Co., and Theodore G. Smith, vice president of Central Hanover Bank & Trust Co."

Of the proposed new board of directors, the Messrs. Hancock, Peabody, Sachs and Smith are at present directors of the company.

Income account for the year ended December 31, 1930, compared with the three previous years as follows:

	1930	1929	1928	1927
Gross profits	‡$2,739,993	$5,732,758	$5,698,815	$8,367,963
Operating expense	5,855,653	6,180,220	5,570,810	6,492,445
Operating loss	$3,115,660	$447,462	†$128,005	†$1,875,518
Other income	177,644	197,733	89,857	172,422
Loss	$2,938,016	$249,729	†$217,862	†$2,047,940
Interest, etc.	98,038	169,666	1,022,215	748,529
Crude rubber loss	760,000	.....	505,448	.....
Depreciation, etc.	.....	927,023	1,180,712	941,670
Net loss	$3,796,054	$1,346,418	$2,490,513	*$357,741

*Net profit. †Profit. ‡After depreciation.

United States Rubber Company Buys Another Georgia Tire Fabric Mill

ANNOUNCEMENT that the United States Rubber Company will take over and operate the Stark Mills of Hogansville, Ga., a 35,000-spindle unit in the Callaway group of cotton mills, has been made by F. B. Davis, Jr., president of the rubber company.

H. Gordon Smith, of New York, vice-president and manager of the United States Rubber Company's cotton mills at Winnsboro, S. C., has arrived at Hogansville to make final arrangements for bringing the production of the Stark Mills up to maximum capacity as rapidly as possible. This will increase the number already employed at the mills in the manufacture of tire cord by over 200 per cent.

Recent large increases in the sales of United States tires in addition to the acquisition by the United States Rubber Company of an interest in the Samson Tire and Rubber Company of Los Angeles, Cal., and the Gillette Rubber Company of Eau Claire, Wis., have made necessary an expansion of the company's facilities for producing cotton cords of the type used in the construction of its tires.

The United States Rubber Company has earned a reputation for regular full time employment in its cotton mills. Even in 1930 when many mills were shutting down entirely and most others were experiencing the greatest difficulty in affording part time employment the mills of the United States Rubber Company at Winnsboro were operated at maximum capacity. Furthermore, the capacity at Winnsboro was increased 18 per cent early in 1930 and operations there have utilized the full capacity of this new machinery ever since it was installed. Now, the addition of the Stark Mills will add another 50 per cent. to the cord manufacturing capacity of the United States Rubber Company.

The Stark Mills are comparatively new and in excellent condition. The equipment is modern and complete in all essentials for the manufacture of high quality cord. The houses in the mill village are of recent construction and there is an attractive community house including a gymnasium and swimming pool.

Through a close working arrangement, which will be established with its mills in Winnsboro, S. C., and with the textile and general development facilities of the United States Rubber Company its tire factories will be assured cord of uniform quality to meet their increased requirements.

India Tyre & Rubber of Great Britain Reports Profit of $1,266,000 in 1930

DIFFERING sharply from the financial reports of tire companies in this country, the statement of the India Tyre & Rubber Company (Great Britain), Ltd., for the year ended December 31, 1930, shows profit after deducting directors' fees of £259,791, or about $1,266,000. This is practically double the 1929 net income of £130,427, or approximately $633,875.

The company has declared dividends of 57½ per cent on the deferred common stock, compared with 27½ per cent in the previous year, and 10 per cent on the preference shares as against 8½ per cent in 1929. After providing for income tax, depreciation and preference dividends, £150,700 was available for the common stock.

The India Tyre & Rubber Company was originally formed in 1927 as a subsidiary of the India Tire & Rubber Company of Akron, O., but it is now understood that the American firm is controlled by the British interests. It is reported that the British company will take over all of the European business of the Akron firm and supply that trade from its factory at Inchinnan, Scotland.

Denman Tire & Rubber Company to Make Tires for the Marshall Field Company

MARKING the entrance of another large private brand distributor into the domestic tire field, the Marshall Field Company, department store operators of Chicago, Ill., has contracted with the Denman Tire & Rubber Company, Warren, O., for the manufacture of a special brand of casings and tubes of all types.

In addition to operating what is termed the world's largest department store in Chicago, Marshall Field is interested in a number of other stores through the country. At the present time, Marshall Field has no tire of its own brand. It is now distributing other makes, but, according to newspaper reports, will discontinue these in favor of its own line. The contract signed last month calls for Marshall Field to purchase all its tires from the Denman company.

A complete line will be manufactured for this purpose, including balloons, high pressure cords and truck tires in all sizes. It is expected that the contract will mean the doubling of the present Denman payroll and output and may eventually lead to an expansion of the factory facilities. Manufacture of the Denman line of tires will be continued by the company, which was until a few months ago known as the Fidelity Tire & Rubber Company.

Automotive Rubber Exports Totaled $2,268,967 During Month of January

EXPORTS of automobile tires, inner tubes, tire sundries and repair materials from the United States during the month of January had a total value of $2,268,967. The principal customer for both passenger car casings and inner tubes was Denmark. Argentina, which usually holds first place, dropped to fifth position as a market for American casings, falling behind not only Denmark but Sweden, the Philippine Islands and Mexico. In the month, 154,227 passenger car casings were exported with a value of $1,200,034 and 32,656 truck casings, worth $752,063.

Rubber boots exported during the month numbered 47,658 with a value of $106,812, and rubber shoe shipments totaled 72, 283 with a value of $62,374. The United Kingdom was the chief market for the former and Chile for the latter. Exports of canvas rubber-soled shoes numbered 132,854 with a value of $99,200. The Philippine Islands was the best customer for this type of footwear, with Cuba in second place.

Shipments of rubber belting in January amounted to 273,000 pounds, worth $134,185, and exports of rubber hose totaled 483,881 pounds with a value of $149,909. The United Kingdom was the leading customer for rubber belting and was second to Mexico as a market for rubber hose.

During January, the United States exported 1,454,217 pounds of reclaimed rubber, valued at $73,191, and 4,676,959 pounds of scrap and old rubber, worth $111,256. Canada was, as usual, our best customer for reclaim, while Spain led France as a market for rubber scrap.

Members of New York Rubber Group Will Hold Meeting on March 11

FINAL arrangements have been completed for the first 1931 meeting of the New York Group of the Rubber Division, American Chemical Society. This session will be held at Cavanagh's Restaurant, 260 West 23rd Street, New York City, on Wednesday, March 11, at 6:30 P. M. A dinner will be followed by two technical papers and an entertainment program.

W. B. Wiegand, of the Binney & Smith Company, New York City, will present a paper on "The Effect of Overmilling on Natural Aging of Rubber." E. K. Files and M. R. Buffington, of Lea Fabrics, Inc., Newark, N. J., will offer a paper on "The Manufacture of Carpets by a New Process Involving the Use of Unspun Fibres Vulcanized to Fabric Backing."

The entertainment program will be featured by Bob Albrecht's Rosedale Orchestra of seven pieces through the courtesy of the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc. Other numbers will also be provided under the direction of Fred C. Batchellor, chairman of the entertainment committee.

The meeting will be preceded by a session of the executive committee at Cavanagh's at 5:30 P. M.

Tickets for the dinner and meeting may be obtained at $2.50 each from John Parks Coe, secretary-treasurer, at the Naugatuck Chemical Company, 1790 Broadway, New York City.

Thermoid Company Financial Statement Shows Profit of $380,765 During 1930

THE report of the Thermoid Company and wholly owned subsidiaries for the year ended December 31, 1930, shows a profit of $380,765 after depreciation, interest and other charges, but before federal taxes. No reserve is set up for federal taxes as the company expects to file a single tax return consolidating operations of all subsidiaries, including the Southern Asbestos Company.

The consolidated income account of the Thermoid Company and wholly owned subsidiaries for the year ended December 31, 1930, follows: Gross profit, $1,582,360; expenses, $925,463; operating profit, $656,897; other income, $9,264; total income, $666,161; interest, $174,628; depreciation, $110,768; profit before federal taxes, $380,765.

Consolidated balance sheets of Thermoid and wholly owned subsidiaries, exclusive of Southern Asbestos Company, as of December 31, 1930, follows:

Assets: Property, plant and equipment, after depreciation, $2,379,482; cash, $582,973; notes and account receivable, $552,094; inventories, $1,015,297; prepaid expenses, $16,391; investment in Southern Asbestos Co. stock, represented by 85,993 shares, $3,953,137; sundry investments, $32,380; preferred stock and notes of company repurchased for sinking fund, $41,664; good will, trademarks and processes, $1; deferred charges, $131,555; total, $8,704,974.

Liabilities: Preferred stock, $3,158,800; common stock and surplus, represented by 256,026 no-par shares, $2,218,379; accounts payable and accruals, $337,295; sinking fund gold notes, $2,870,500; reserve for loss on purchase commitments, $120,000; total, $8,704,974.

R. J. Stokes, president, in remarks to stockholders of Thermoid, states: "The balance sheet shows a ratio of current assets to current liabilities of more than 6 to 1, the investment in Southern Asbestos Company being carried at cost and not reflected in the current position of Thermoid. Current position of Southern Asbestos showed a ratio of over 5 to 1.

"Thermoid's profit before federal taxes available for note interest and depreciation of $666,161 was more than 3¼ times interest requirements for the period. After interest and depreciation we had available for preferred dividends $380,765, which is 1.94 times actual preferred dividends paid and 1.72 times present maximum requirements. Dividends on preferred stock for the period were $195,875, whereas the maximum annual requirements including all preferred stock issued in the acquisition of Southern Asbestos Company and now outstanding amount to $221,116. After preferred dividends paid, there remained from operations $184,890 applicable to common stock, equivalent to more than 72 cents a share."

The Thermoid Company has now completed the acquisition of the Woven Steel Hose & Rubber Company, Trenton, N. J., enabling it to offer a complete line of mechanical rubber goods and rubber hose. Mr. Stokes states that the Thermoid Company has already secured orders for molded hose which will double the production of the Woven Steel Hose factory for a period of at least three months.

Thermoid Company directors last July, due to the lower earnings, voted to omit the common dividend of which two quarterly payments of 50 cents each had been made earlier in the year. Since the common stock of the Thermoid Company was listed on the New York Stock Exchange last summer, it has declined from 26⅞ to a low of 3⅞ and is currently selling at about 7. In 1929 the common sold on the New York Curb Exchange as high as 38.

(Other news of the industry will be found on pages 567-573)

The Story of CARBON BLACK

Views of operations showing progression of steps necessary in standardized production of Carbon Black for rubber compound

—*Told in Pictures*

1. Gas Well Coming In

Development of gas resources is the necessary preliminary to carbon black manufacture.

2. Laying Pipe Lines

Collecting lines, frequently running through forests and swamps and under rivers or bayous, bring the gas from the wells to producing centers.

3. Gasoline Plant

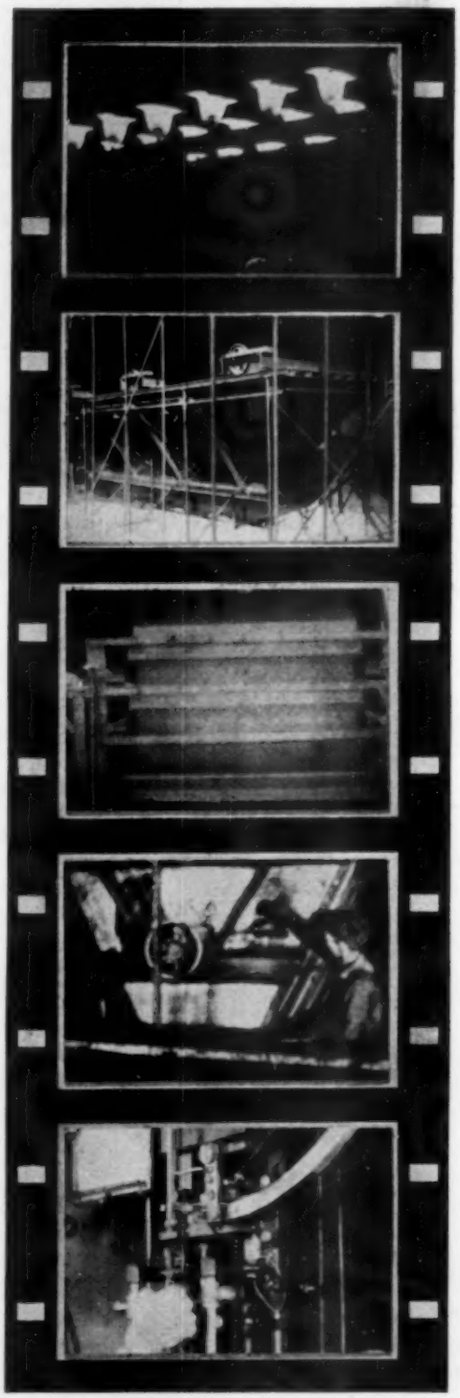
To conserve natural resources, the gasoline content of the gas is removed before burning to produce carbon.

4. Carbon Black Factory

Looking from across the prairie toward a black plant, one sees principally a great cloud of dusky smoke.

5. Burner Houses

In hundreds of sheet-iron burner houses, carbon black is produced by the impingement of millions of small flames upon channel surfaces.



6. Flames

Lazy, luminous flames produce carbon of sub-microscopic fineness.

7. Collecting Apparatus

The working mechanism consists of a moving table of channel irons equipped with scrapers placed over V-shaped hoppers which drop the product into a screw-conveyor.

8. Bolting

After refining and air treatment, the black is double-bolted through fine metal screens as an extra safeguard.

9. Blending Tanks

Large agitating tanks blend the product of forty to fifty burner houses.

10. Rubber Testing

Finally, the product is rubber tested.

Illustrations taken from Film, "The Story of Microns," courtesy of Binney & Smith Co., N. Y.

A Forecast on the PRODUCTION *and* CONSUMPTION of Crude Rubber During 1931

Total World Consumption and Production Will Probably Be Nearly Equalized—Market Price Will Be Determining Factor

ALL of the prophesies on the production and consumption of crude rubber during 1930, made at the beginning of last year by the leading American and British rubber trade authorities, missed the mark by a wide margin. There may be some consolation in the statement that *if* world economic conditions had been more normal, or *if* the steady industrial expansion of 1928-29 had continued, most of the prophesies would have been realized, but *ifs* are the things which make prophesies so perplexing and uncertain. In the light of the complete up-set in the calculations of last year's prophets, it is with extreme timidity that THE RUBBER AGE ventures to make its prognostications for 1931. This year there is a tendency on the part of all trade authorities to be ultra-conservative in their figures.

Any predictions for 1931 must be predicated upon two assumptions, first that the market price of crude rubber will remain below 10 cents and second, that the present economic depression has reached rock bottom and a gradual improvement in conditions will manifest itself during the rest of the year. A change in either of these factors will necessarily alter predictions.

Outstanding Influences in the Situation

It is fairly safe to assume that in the light of the heavy stocks on hand, which must be partially absorbed before any change can come in the market price levels, the price per pound will remain around 8 or 9 cents for the balance of the year. There is also evidence already of an improvement in the economic situation.

The outstanding factor which will influence production is, of course, the market price of crude rubber. There has been an increasing number of reports of considerable curtailment in tapping on both the estates and native holdings, due to the inability to produce at a profit at prevailing prices.

The outstanding factor which will influence consumption is the growing necessity on the part of consumers to make replacements of worn out tires and other rubber products. From the present outlook 1931 can be considered as a 'replacement year' for all classes of manufactured articles.

World Rubber Production

	1929 Long Tons	1930* Long Tons	Predicted for 1931 Long Tons
British Malaya	445,000	434,000	400,000
Netherland East Indies	260,000	240,000	215,000
Ceylon	80,000	76,000	70,000
India and Burma	12,000	10,500	10,000
Sarawak (Malayn Imports from)	11,000	10,500	10,000
British North Borneo	7,000	7,000	7,000
Siam	5,000	4,500	4,500
Indo-China	9,000	9,500	9,000
Brunei	500	500	500
Philippine Islands	300	500	600
Papua, Samoa and Fiji	600	500	500
Amazon Valley	21,000	14,000	15,000
Other America, except Guayule	900	500	500
Guayule	1,500	1,000	3,000
Africa	5,000	4,000	4,500
Total	858,800	813,000	750,100

*Official figures, estimated from latest returns, by the Department of Commerce.

The production and consumption of crude rubber in 1931 should come very near to an equilibrium. In fact, from the predicted figures, consumption should exceed production by a small margin of possibly 15,000 tons. Such a situation, however, will make no difference in the market levels in view of the abnormally high stocks on hand to be absorbed, but it will be the first time since 1926, with the exception of 1928, that consumption has approached production.

The accompanying table, published by Wm., Jas. and Hy. Thompson, (Rubber) Ltd., London, shows the relation between production and consumption over the last decade. Few industries have shown a degree of progress comparable with the rubber producing and manufacturing

Rubber Shipments and Consumption
(Thousand Tons)

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
SHIPMENTS.										
British Malaya and Ceylon	191	261	238	220	256	345	297	357	536	520
Dutch East Indies	71	94	117	149	189	204	229	229	256	239
Rest of World	38	45	52	60	73	73	81	71	71	62
Total	300	400	407	429	518	622	607	657	863	821
CONSUMPTION										
U. S. A.	190	290	306	340	385	358	373	442	464	377
Rest of World	100	120	115	140	166	175	210	238	327	301
Total	290	410	421	480	551	533	583	680	791	678
Added to (+) or Taken from (—) *World's Rubber Stocks	+10	—10	—14	—51	—33	+89	+24	—23	+70	+143

World Rubber Consumption

	1929 Long Tons	1930* Long Tons	Predicted for 1931 Long Tons
United States	475,000	370,000	425,000
United Kingdom	65,000	70,000	75,000
Germany	49,000	45,000	40,000
France	54,000	63,000	65,000
Canada	35,000	30,000	35,000
Japan	30,000	30,000	35,000
Italy	17,000	18,000	20,000
Russia	11,000	17,000	20,000
Australia	15,000	5,000	10,000
Belgium	9,000	10,000	10,000
Other Countries	25,000	27,000	30,000
Total	785,000	685,000	765,000

*Official figures, estimated from latest returns, by the Department of Commerce.

industries in the last 10 years. The period between 1921-29 shows an increase in consumption of approximately 235 per cent, while production increased over the same period approximately 275 per cent. And the increase was in spite of a virtual 'pegging' of rubber production to 250,000 tons in British areas during 1922-25, while the Stevenson scheme was in operation.

The fall in consumption in 1930 was an abnormal feature in the otherwise steady rising curve. Past minor recessions such as in 1926 have been followed by renewed activities and while the set-back in 1930-31 is world wide and therefore may necessitate a long period before recovery is reached, nevertheless, it would appear that the curve will continue upward during the coming years.

The accompanying tables show, in round figures, the actual production and consumption of crude rubber in 1929, and 1930 and the estimated figures for 1931.

Low Prices Cause Involuntary Restriction

The low market price of rubber is forcing an involuntary restriction in practically all producing areas. It is being felt more keenly by the British estates in Malaya but is also reaching to the native producers of the Dutch East Indies. At least 35,000 acres of British estate rubber had temporarily ceased tapping at the beginning of 1931 and the acreage to go out of tapping will increase under the present price market as the weaker companies and native growers fail to stem the tide of the present critical period. Needless to say, few new maturing acres will be tapped until the market improves. Native "family" holdings in British Malaya will be tapped to the utmost and may offset some of the loss in production from estates. The total British Malayan production in 1930 declined 12,000 tons but the native production increased by approximately 10,000 tons.

It is estimated that the total production in British Malaya during 1931, under present conditions, will not exceed 400,000 tons.

The native holdings of the Dutch East Indies have been also hard hit by the prevailing prices, because of export duties levied and the less efficient conditions surrounding the native preparation of raw rubber. As a consequence, the price they receive is considerably lower than that of the native producer in British Malaya. Dutch estates and British owned estates in the Dutch East Indies are also curtailing production to a limited extent.

It is estimated that the total production in the Dutch East Indies for 1931 will be around 215,000 tons.

The same price factor is expected to influence output in the other producing centers, to a more or less degree. However, considerable new acreage is maturing in many of these sections which will be tapped if any advance whatever comes in the market price and this new rubber will tend to maintain production at 1930 levels in these secondary areas.

The total production from all producing areas for 1931 should reach approximately 750,000 tons.

1931 Regarded as "Replacement Year"

As before stated, 1931 is being looked upon as a "replacement year." In the United States, tire inventories are lower than for some time past and dealers' stocks are reported to be moving more satisfactorily. Automobile production is again climbing gradually with the indication that considerably more original equipment tires will be needed than was the case in 1930. It is also conservatively estimated that the production of tires in 1931 will exceed 60,000,000.

Replacements and new rubber equipment in the line of mechanical goods are expected to be needed in increasing quantities during the year as industrial activities resume normalcy and the public works and other large engineering projects, already planned, get under way.

It is believed the domestic consumption of crude rubber should total for the year, at least 425,000 tons.

Abroad there appears to be evidence of the same need for considerable replacement business as prevails in the United States. However, authorities are not yet ready to predict much of an increase in consumption in any particular market. England should show a slight advance in tonnage used, as should Canada, Japan, Australia and Italy. To maintain the now famous Five Year Plan, Russia should show an increase. As a matter of fact, with the exception of Australia, rubber consumption in the foreign manufacturing centers was fairly well maintained during 1930.

The total world consumption of crude rubber is therefore estimated at around 765,000 tons.

But many factors may upset these calculations. After such a year for the prophets of the industry as 1930, the above estimates are given with extreme timidity.

Ideas on 'New Uses of Rubber'

A SPECIAL campaign to develop 'new uses for rubber' has been opened by the suggestion department of the Akron plant of the Goodyear Tire and Rubber Company and will continue through March. Employees are invited to submit suggestions as to articles now made of other materials but which could be made of rubber or of new and wider uses of rubber products now on the market.

The object of the campaign is two-fold. New products which can be manufactured profitably will increase the activities of the company and permit of more work for present unemployed Goodyear workers and will bring awards to suggestors.

Beating the Spider

A VERY difficult problem faced the stage manager of a British film studio, where "77 Park Lane" is now being produced in three languages. He wanted to have a cellar scene, but he was puzzled as to how he was to reproduce the cobwebs. Due to the ingenuity of one of the technical operators a solution of the problem was discovered. This man invented and made a little mechanical device, which he filled with rubber solution. When sprayed with great force it formed the most perfect web-like film on the walls and windows.

Rubber Seals Huge Vacuum Pipe

Plays Important Part in Scientific Experiment by Dr. Michelson to Determine the Velocity of Light

By EDGAR C. NICHOLS

Designing Engineer, Mount Wilson Observatory, Pasadena, Calif.

Mile Long 36" Pipe in Which a Vacuum Is Created and Through Which the Speed of Light Is to Be Measured

AMONG the many problems, unique in present engineering practice, which have arisen in connection with Dr. Michelson's experiment to determine the velocity of light in vacuum, one should be of particular interest to the readers of this magazine, namely the method developed for the air-tight sealing of the joints in the vacuum tube.

The apparatus set up for the experiment consisted, in brief, of ninety 60-foot lengths of 36-inch diameter corrugated pipe, each of which was mounted independently with one inch spaces between ends for temperature expansion. The joints connecting them had of necessity to be flexible. The large number of these connections and their size made any type of mechanical, machined joint prohibitive in cost. Therefore the entire vacuum container was constructed with no machined surfaces of any sort, an accomplishment made possible by the use of 20 x 7.00 (32—6.75) balloon type rubber inner tubes in sealing the joints.

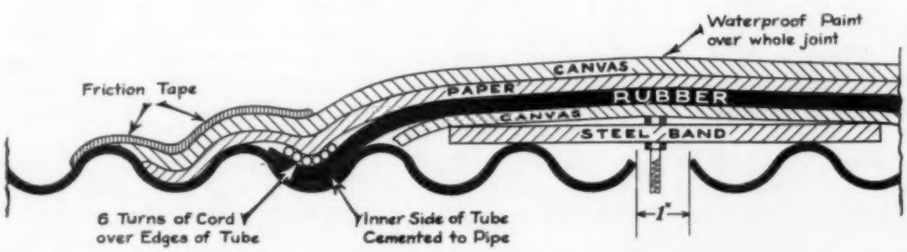
Details of the Jointing

In more detail, the process developed was as follows: The inner tubes above mentioned were slit around their inner diameter, slipped through the one inch space between the sections and stretched over the pipe end like a rubber band, ready to be put in place later. The spaces between the pipe ends were then bridged with bands of 12 gauge steel which were necessarily required to resist the 2,000 pound per square foot collapsing pressure created by the vacuum. The steel bands were then wrapped with a covering of canvas to protect the rubber bands. The next step was to slip these inner-tube bands into place over the canvas with their edges snugly fitting a valley in the corrugated pipe ends. These edges were then cemented directly to the metal and wrapped with strong cord to hold them in place. As a final precaution the tube was given a protective coating of special rubber cement and wrapped with a covering of opaque paper and weather proof canvas.

Joints in Service 18 Months

Some of these joints have given satisfactory service for eighteen months and failure of the tubes has, in the majority of cases, been due to the rubber's checking, becoming porous and finally tearing. An attempt to retard the action of the checking is being made by covering the inner tube bands with a layer of calendered raw rubber.

At least some idea of the success of this method of joint sealing may be derived from a knowledge of the quality of vacuum accomplished at the present time. The container has a volume of 40,000 cu. ft. with an enclosing surface approximately ten times that of a sphere of the same volume. With this large ratio of surface to volume and number of joints, a vacuum of one and one-half millimeters has been accomplished; this means that of the 40,000 cu. ft. of free air originally contained in the tube only about 160 cu. ft. remains. The leakage at the present time is less than one cu. ft. of air per minute, an amount which is gradually being reduced by systematic search for small leaks along the line.



Detail of the Flexible Joint

Inner tubes used were carefully tested for microscopic leaks by inflation and immersing in water

ULTO and RETARDEX

A NEW accelerator, sold under the trade name "ULTO" and a new retardant, "RETARDEX," are the latest products to be introduced to the rubber manufacturing industry by the C. P. Hall Company, Akron, O.

ULTO has been developed for use in very rapid cures at low temperatures. It is a zinc salt of a complex organic dio-thio-carbamate and is a finely divided, cream colored powder with a specific gravity of 1.50. It is said to combine the qualities of SPDX with entire freedom from discoloration so that it can be used with pure white or pastel colors. It exhibits no detrimental after-cure; is non-migratory and does not bloom to the surface and possesses excellent aging properties. As an ultra-accelerator it must be handled with some care and in some cases RETARDEX may be used to avoid prevulcanization.

ULTO disperses readily in rubber but due to its activity in small amounts it is preferable to use 15 to 25 per cent master batches. It is stable in storage, is harmless to workmen and causes no skin disorders.

It is claimed to be especially advantageous for quick curing cements but will cure pure gum or compounded stocks with equal ease. Stearic acid has practically no effect upon ULTO.

RETARDEX is claimed to be a product which fulfills a long-felt need in the rubber industry for an organic material that elevates the "critical" temperature without materially affecting the time-tensile curing curve. Low temperature curing is considerably simplified by the use of RETARDEX in conjunction with the active accelerators. In rapid curing stocks, RETARDEX is said to simplify milling and calendering operations and scorching is eliminated as well as any danger of "shelf curing."

The material is a light colored, finely divided solid which may be easily dispersed in rubber and which has no staining characteristics. It may be used in white or pastel colors. The master batch method of handling is recommended, using 12½ to 15 per cent of RETARDEX. The material does not deteriorate in storage.

For most accelerators which have a tendency to scorch, the manufacturers recommend the use of 0.5 to 1.0 per cent RETARDEX to the batch, although for certain stocks the quantity may be lower. It is claimed that the effect of RETARDEX on the time-tensile-curve of many accelerators is very slight at curing temperatures, the major effect being at those lower temperatures at which scorching takes place. With various ultra-accelerators, air-curing at room temperature is prevented, whereas if the temperature is raised to 212 degrees F., or above, normal curing takes place.

Suprex White

A NEW rubber filler, for use as a substitute for blanc fixe, especially in the manufacture of inner tubes, is the latest product to be offered to the rubber trade by J. M. Huber, Inc., 460 West 34th Street, New York City, under the trade name of Suprex White. The new product is a highly purified type of calcium carbonate, precipitated directly from high grade raw materials. Its specific gravity is 2.70 as compared with 4.20 for blanc fixe, thus permitting of a volume saving of nearly 36 per cent. It is also cheaper in price.

Compounding on equivalent volume basis, Suprex White is said to develop approximately the same curing curve as blanc fixe, but higher ultimate tensile and stress strain results. Resistance to tear and abrasion, and aging properties of Suprex White compare favorably with blanc fixe. It is also said to possess excellent re-enforcing qualities.

Crude and Reclaimed Rubber Survey

CRUDE rubber consumption in the United States amounted to 160,000 long tons during the last six months of 1930, and consumption of reclaimed rubber amounted to 65,500 long tons in the same period, according to the Department of Commerce. Comparable statistics are as follows for recent years:

United States Crude and Reclaimed Rubber Consumption

	Crude Rubber Long Tons	*Reclaimed Rubber* Long Tons	*Ratio of Reclaim to Crude* Per Cent
1925	388,000	137,000	35.3
1926	366,000	164,500	40.0
1927	373,000	189,500	50.8
1928	437,000	223,000	51.0
1929	467,400	217,000	45.5
1930—1st 6 Mos.	216,000	88,000	40.7
1930—2nd 6 mos.	160,000	65,500	40.9
1930	376,000	153,500	40.7

The ratio of reclaim consumption to crude rubber consumption during the last half of 1930 works out at 40.9 per cent against 40.7 per cent during the first half of the year. These percentages might be thought to indicate no reduction in the use of reclaims. It is in tires, however, that the smallest percentage of reclaim is used—in times of low tire production the percentage use of reclaim normally increases. During the last half of 1930, it is believed that tire production was at a lower rate than production of other rubber goods as a whole, and this tended to hold up the percentage figure for reclaim. An increasing production of tires during 1930 would normally result in a lower percentage use of reclaim during the current year. It is nevertheless remarkable that reclaim should continue so strong a factor at the crude rubber price average of the last half of 1930, and it argues well for the worth of reclaims as essential compounds in the rubber manufacturing industry. Few would have predicted that reclaim would so nearly hold its own with the price of crude rubber under 10 cents a pound.

Year-End Stocks of Crude Rubber

THE figure of 201,000 tons is estimated to represent the actual quantity of rubber in this country at the year-end. If to the figure of 155,000 tons, on hand June 30, is added the net imports during the last half of the year, 209,081 tons, and then the consumption of 160,000 tons is subtracted, the calculated stocks would be 204,081 tons. This leaves a discrepancy of 3,081 tons of rubber to be accounted for. That there is a certain regular disappearance of rubber through differences of weights at time of entry and at time of manufacture, from loss of records, or otherwise, has been our experience from past surveys of United States rubber consumption, and the amount of 3,081 tons is less on the 1930 consumption than the 1 per cent allowed for shrinkage in our survey for 1929. If, for statistical purposes, this "shrinkage" is considered as "consumption," the consumption for the year would figure to 379,081 tons. Use of this figure will bring stocks at the beginning and end of the year into balance with net imports.

The Rubber Division of the Department of Commerce will use the figure of 201,000 long tons as United States stocks on December 31, 1930, in future calculations.

Rubber Goods Sales Under Billion Dollar Mark

FOR the first time since 1924 the total sales value of all rubber products shipped from American factories in a twelve-month period dropped below the billion-dollar mark. According to figures compiled from the final 1930 quarterly questionnaire of the Rubber Manufacturers Association, the value of all shipments of rubber manufactures last year totaled $872,965,200, nearly 24 per cent under the 1929 shipments of $1,146,918,500.

Tires, tubes and tire sundries accounted for $563,897,800, or 64.6 per cent of the total sales value of all rubber goods, whereas in 1929 these items represented 66.6 per cent of the total and in 1928 over 70 per cent. The value of other rubber products last year was $309,067,400.

Total crude rubber consumption by the domestic industry last year was 371,120 tons, of which tires and related items used 305,423 tons and other rubber goods 65,697 tons. This compares with a 1929 consumption of 466,475 tons, of which 393,264 tons went into the tire industry and 73,211 tons to miscellaneous products.

Sporting goods, toys and novelties, and miscellaneous rubber items were the only groups to show an increase in sales value last year over 1929. Increased production, as indicated by crude rubber consumption, was noted in the case of motorcycle tires, insulated wire and insulating compounds, stationers' rubber goods, heels and soles, sporting goods, toys and novelties, and miscellaneous items. All other groups of rubber manufactures recorded sharp declines from the previous year.

The fourth quarter of 1930 proved to be the lowest three-month period in respect to rubber consumption since the final quarter of 1923. Domestic rubber consumption in October, November and December totaled 72,020 tons, as compared to 85,261 tons in the previous quarter and 84,872 tons in the last quarter of 1929.

The figures in the table below are estimated by the association to represent 92 per cent of the industry in the United States, but those quoted in this article have been raised to represent 100 per cent of the domestic industry.

Comparative Table of Value of Rubber Goods Shipments from Manufacturing Plants and the Amount of Rubber Consumed in the Past and Previous Quarters and the Last Two Years

Total Sales Value of Manufactured Rubber Products Shipped

Thousands (,000) omitted

	Product	4Q-30	3Q-30	4Q-29	Total, 1930	Total, 1929
	Tires and Tire Sundries					
1	Auto and Truck Casings	$77,722	$123,882	$102,267	$429,425	$578,981
2	Auto and Truck Tubes	11,368	17,895	14,758	62,097	82,931
3	Motorcycle Casings and Tubes	124	268	199	888	1,348
4	Bicycle Casings and Tubes	532	679	631	2,366	2,877
5	Aeroplane Casings and Tubes	70	102	63	385	454
6	Solid and Cushion Tires	1,568	2,719	3,149	9,344	17,203
7	All other Solid Tires	231	272	320	1,162	2,365
8	Tire Sundries and Repair Material	2,699	3,541	3,614	13,119	16,868
	TOTAL—Tires and Tire Sundries	$94,314	$149,358	$125,001	$518,786	$703,027
	Other Rubber Products					
9	Mechanical Rubber Goods	$16,801	$20,031	$23,200	$87,559	$111,195
10	Boots and Shoes	25,228	25,421	36,301	88,480	110,856
11	Insulated Wire and Insulating Compounds	5,732	65,802	8,230	25,879	33,126
12	Drug Sundries, Medical and Surgical Rubber Goods	2,147	1,887	1,545	7,487	8,141
13	Stationers' Rubber Goods	459	478	601	2,086	2,560
14	Bathing Apparel	162	371	234	2,878	2,987
15	Rubber Clothing	1,291	1,411	2,610	4,797	8,536
16	Automobile Fabrics	1,012	1,342	1,892	6,763	10,627
17	Other Rubberized Fabrics	1,872	2,385	2,904	7,375	9,493
18	Hard Rubber Goods	1,546	61,555	1,679	5,578	6,795
19	Heels and Soles	4,752	4,651	5,792	20,007	23,759
20	Rubber Flooring	861	803	1,189	3,810	4,584
21	Sporting Goods, Toys and Novelties	1,604	2,737	1,356	9,441	7,612
22	Miscellaneous, not included in any of above Items	3,073	3,106	2,482	12,202	11,867
	TOTAL—Other Rubber Products	$66,540	$71,980	$90,015	$284,342	$352,138
	GRAND TOTAL All Products	$160,854	$221,338	$215,016	$803,128	$1,055,165

Crude Rubber Consumed—Long Tons

	Product	4Q-30	3Q-30	4Q-29	Total, 1930	Total, 1929
	Tires and Tire Sundries					
1	Auto and Truck Casings	41,599	50,540	48,244	224,211	289,118
2	Auto and Truck Tubes	8,528	11,425	10,096	46,224	56,683
3	Motorcycle Casings and Tubes	35	58	47	280	259
4	Bicycle Casings and Tubes	192	264	401	1,100	1,277
5	Aeroplane Casings and Tubes	15	29	25	78	178
6	Solid and Cushion Tires	1,060	959	1,873	4,685	8,990
7	All other Solid Tires	53	69	106	298	805
8	Tire Sundries and Repair Materials	802	1,009	792	4,113	4,493
	TOTAL—Tires and Tire Sundries	52,284	64,353	61,584	280,989	361,803
	Other Rubber Products					
9	Mechanical Rubber Goods	4,117	4,246	4,692	18,719	22,282
10	Boots and Shoes	3,226	2,846	5,534	14,766	18,974
11	Insulated Wire and Insulating Compounds	1,140	905	1,050	4,009	3,814
12	Drug Sundries, Medical and Surgical Rubber Goods	408	431	469	1,580	2,038
13	Stationers' Rubber Goods	295	282	280	1,332	1,326
14	Bathing Apparel	92	85	155	653	765
15	Rubber Clothing	267	201	356	1,051	1,479
16	Automobile Fabrics	155	204	252	883	1,277
17	Other Rubberized Fabrics	595	750	681	2,233	2,354
18	Hard Rubber Goods	267	286	236	1,134	1,273
19	Heels and Soles	1,711	1,470	1,677	6,827	6,318
20	Rubber Flooring	262	272	282	1,098	1,122
21	Sporting Goods, Toys and Novelties	479	612	362	2,222	1,565
22	Miscellaneous, not included in any of above items	960	1,498	472	3,934	2,767
	TOTAL—Other Rubber Products	13,974	14,088	16,498	60,441	67,354
	GRAND TOTAL—All Products	66,258	78,441	78,082	341,430	429,157

Rubber Balls Replace Back Tire

A LONDON dirt track motorcycle rider has invented a wheel to permit a machine to "broadside" round corners on the dirt track in speed races. Ordinary broadsiding demands a circuit at least 250 yards in diameter and a surface of loose cinders. With this new back wheel it is possible to broadside in a small, dry, hard-surfaced square.

The inventor, Leslie Blakeborough, says it will be possible to hold motorcycle races on any skating rink or to

Leslie Blakebrough, with the New Type of Rear Wheel Which He Invented for Racing in Small Spaces

give spectacular demonstrations on the vaudeville stage. There is also the possibility of winter racing, under cover, on midget tracks.

In place of the back tire 32 hard rubber balls, each the size of a tennis ball, are loosely mounted on spindles, set at an angle of 45 degrees to the wheel hub spindle, between the two steel flanges bolted to the ordinary wheel rim. When the engine is pulling at a moderate pace the machine travels in a straight line, but when speed is increased it heels over to the left and slides in an anti-clockwise direction. Shutting the throttle causes it to slide in the opposite direction. On tracks up to 50 yards diameter these wheels can be used on the back axle of a fast, small car.

Obsolete Equipment

REFERRING to the editorial in the Feb. 25th issue of THE RUBBER AGE under the above title, it is a timely and important subject.

It inspires the question, "Just when does rubber manufacturing equipment become obsolete?" Or, in other words, "How can one be certain when rubber manufacturing machinery is worn out?"

Unfortunately, the rule or formula that definitely answers this question has not yet been written. It is not easy to write one that is applicable to everything. Some automobile owners, for example, declare that a car "wears out" in one year and they annually trade in their one-year-old cars for new ones. But the "old" car still continues to run for a number of years in the hands of subsequent owners. Whether or not an automobile is worn out therefore is largely the whim of the owner.

In some steam power plants ten-year-old engines and turbines are being "junked" and replaced by more efficient and more economical apparatus. The selfsame equipment in other less progressive power plants would have been kept another ten years or more.

We all have our own ideas about worn out clothes and when they should be replaced. The average man "wears out" one straw hat and one felt hat each year. Women "wear out" hats more rapidly than men. Some people use lead pencils until they are "stubs." Others discard them as soon as they are inconveniently short. And so on. What, then, is a good rule? My answer is this: A thing is worn out as soon as it is found that it will PAY to replace it.

For example, a certain power transmission belt, eight years old, pulls full load immediately after tightening. But it stretches quickly, slips, and must be retightened often. It is too old. Its elasticity is gone. The cost of frequent retightening, plus the cost of lost power due to slip, plus the loss of production are so high that it would easily PAY to install a new belt. Simply because we can "get along" with an old machine, part, or thing, is no proof that it is not already worn out. My contention is that entirely too much machinery is in daily use that is "worn out." It should be replaced because it will PAY to replace it.

W. F. SCHAPHORST, M.E.

Rubber Footwear Survey

THE Rubber Division of the Department of Commerce is now making its annual survey covering stocks of waterproof rubber footwear in the hands of dealers as of March 1. The primary purpose of the survey is to assist the industry in better estimating probable market requirements, so as to avoid either overproduction and forced liquidations of stocks on the one hand, or under production with consequent shortage and excessive high prices on the other hand.

A questionnaire form is used in securing the information necessary and the Department of Commerce is strongly urging all dealers to cooperate whole-heartedly in submitting the desired information. The completed survey will be available March 31.

Canadian Rubber Association

AT the annual meeting of the Rubber Association of Canada, held in the Mount Royal Hotel, Montreal, February 9, the following officers were elected for the current year: C. A. Jones, Seiberling Rubber Company, Ltd., Toronto, president; J. H. Coffing, Jr., vice-president; C. N. Candee, treasurer. Mr. Jones succeeded W. A. Eden, Dominion Rubber Company, Ltd., Montreal. Directors elected included C. A. Jones, W. A. Eden, F. L. Freudeman, John Westren, E. S. Sargent, W. H. Miner, C. H. Carlisle, E. W. BeSaw and J. H. Coffing, Jr.

At the annual dinner, held in the evening, the principal speaker was the Honorable W. A. Gordon, Minister of Immigration and Colonization and Mines. W. A. Eden, the retiring president of the Association, acted as chairman at the dinner.

Safety Records

	1927	1928	1929	1930
Goodyear (Akron Plants)				
Accidents	2648	1720	819	523
Per Cent Reduction	....	35	52	36
Goodrich (Akron Plants)				
Accidents	1251	921	511	146
Per Cent Reduction	....	26	48	45

Reconditioning Air Bags By Burning

By CHARLES E. MAYNARD

Factory Superintendent, Fisk Rubber Company, Chicopee Falls, Mass.

IT IS customary, when vulcanizing a tire in a mold, to place inside of the tire a heavy-tube-like container into which is forced a high fluid pressure, such as air, steam, carbon dioxide, or water. This container ordinarily is called an "air bag." It s made of compounded rubber about half-inch thick and can be used about 200 to 300 times. This air bag with its pressure forces the tire to the mold, thus forming the tread projections together with the lettering and other markings that can be observed on the exterior surface of the tire. It also serves to compact the tire into a firm structure.

The cost of these bags, together with their maintenance, is an item of no small consequence in tire manufacture. During the last ten years the life of these bags has been gradually increased. This has been done by improvements made in the compounding of the rubber stock, in the manufacturing of the bag, and in the methods of maintaining them. The cost of maintaining the bags always has been an item of considerable expense and a problem upon which tire manufacturers have expended a great deal of effort.

Reconditioning Costs

While studying this problem of reducing air-bag costs the process development department of the Fisk Tire Company developed a machine, for which a patent is pending, which removes the hard layer on the surface, by burning and scraping in one operation, leaving a smooth surface. A bag treated in this manner reverts to the original soft flexible condition which it had when it was new. This is a decided advantage in the operation of inserting the bag into the raw tire and extracting it later from the cured tire, because it is necessary during these operations to bend the bag considerably.

The cost of illuminating gas used for a combustion medium in this machine amounts to a fraction of a cent per bag and the total time of burning the bag is about a minute. Considerably less material is removed by the burning method than by the old buffing method and the bag itself is much smoother. On account of the smaller amount of material removed from the bag and the increased flexibility which the burning gives the bag its life has been extended about 20 per cent. The difference between the labor cost of the two methods—i.e., burning versus buffing—is approximately $4.06 per 100 bags in favor of the burning method.

Raw tires contain a considerable quantity of free sulphur, part of which combines with the rubber during the cure, but some of it migrates to the bag. This migration of sulphur from repeated heatings results in a stiff, hard layer on the surface of the bag which cracks when pressure is applied or when the bag is flexed while inserting it in the raw tire. These cracks finally become extended enough to allow the rubber to flow into them during the cure, which gives a rough appearance to the inside of the tire. This makes it necessary at regular intervals to take the bag from service and remove this hard exterior.

The common method of removing the hard surface from the bag in years past was to grind it off by means of power-driven buffing or grinding machines. This method, however, had one disadvantage in that it was practically impossible to grind off a uniform layer. Any unnecessary buffing of the bag naturally tended to reduce its life. And the bag, after it was buffed, did not have as smooth a surface as when it came out of the mold.

Operation of the Machine

To operate the new machine an air bag is placed on a ring on the left side of the machine. By stepping on a pedal, underneath the bag, the operator can swing the bag between the gas burners of the machine. These burners are made in two sections which open while the bag is being swung into position. As the bag is swung into the burner a clutch is automatically thrown in, which starts the bag rotating, and at the same time the gas is turned on full, starting the burning operation. Scrapers are automatically closed about the bag, and it slowly rotates through the burner and the scrapers. At the completion of the burning operation the scrapers and the burner are automatically thrown open and the bag can be swung about and removed. As it swings about the clutch is thrown out automatically. The scrapers are cleaned as they open to allow the bag to move out of the burning position and the burnt refuse drops into a container underneath the scrapers. Only a fraction of a minute is required to change the scrapers and adjust the machine for a different size bag. By means of this machine a uniform layer can be removed from the bag and by varying the speed of the rotation the thickness of the layer can be controlled.

Results obtained by research and development work in the particular detail of tire manufacturing are typical of what has been accomplished in other phases of the industry. Accumulative results from such efforts have contributed in a large degree to the low price and high quality of the automobile tire that is manufactured at the present time.

Note: Reprinted from Chemical and Metallurgical Engineering, February, 1931.

Rubber Fishing Line

COUNT FELIX von LUCKNER is reported to be embarking soon on a fishing trip to the Bahamas and will carry along a new type of fishing tackle. It consists of a rubber rope 100 feet long with a hook at the end. With luck the Count expects to bounce the fish right on deck.

EDITORIAL COMMENT

Straws in the Wind

DIRECT evidence of a change for the better within the rubber manufacturing industry is seen in the latest report of the Conference of Statisticians in Industry prepared under the auspices of the National Industrial Conference Board. Although the figures presented go only up to the first of February, the comparison with December figures substantially warrants the assumption that an upward industrial trend is beginning.

Automobile production increased by 14 per cent during January over December's level. The seasonal increase for the month is normally but 10 per cent. The increase in January follows the pre-seasonal up-turn in output experienced in December, which likewise showed a monthly gain of 14 per cent. New passenger car registrations during December gained 3.2 per cent over November.

Crude rubber consumed in January showed a 33 per cent gain over consumption in December, or a total of 28,557 tons. Reports indicate that this tonnage has been maintained if not slightly exceeded during February. Tires on hand December 31, amounting to 9,003,438, represented a 6.2 per cent decline from the November inventory figure and was 24 per cent below the number held at the end of 1929.

Judging from the favorable movements already observed, the industrial storm so long endured seems to be finally clearing.

Restriction?

LATEST news from abroad would indicate that there is again some serious talk of restriction being revived. The new plan seems to hinge on the acceptance by the Dutch of Sir George Maxwell's suggestion that production be cut 25 per cent from the 1929 output in British areas and Dutch East Indian estates and the export duty on native production from the D. E. I. be raised to 10 per cent. The constantly mounting stocks in the chief trading centers and the dilemma facing the plantation interests give rise to the rumor that, this time, the conversations on the subject of restriction will be pursued with genuine seriousness.

A new and interesting basis for calculating the degree of restriction necessary to bring about some equilibrium between the present huge supplies and the curtailed demand for crude rubber, comes in the proposal of the well-known firm, Symington and Sinclair, London, that authoritative estimates of probable consumption for the next two years be attempted through the cooperation of the various rubber trade bodies. With the establishment of such figures, the plantation interests will have a basis on which to adjust their production so that accumulated stocks can be worked off within a reasonable time.

More on Unemployment Insurance

EVERY employe of the General Electric Company in Schenectady who has been out of work this winter, or even on part-time employment, has been cared for financially by the company's unemployment pension plan, thus materially lessening the burden of community relief work.

Just what such assistance means to a community is evidenced from the fact the mayor's committee, which is now caring for 900 families at an expense of $7,000 per week, would have its relief work more than trebled but for the splendid help from General Electric in caring for about 2,200 of its own employes.

In announcing that the unemployment plan mutually adopted by the employes of the General Electric Company and the company last summer has cared for all its own employes here, the board of administrators of the plan stated that 682 employes, who have been entirely laid off, have received a total of $69,987 in payments or loans thus far, and that 1,509 employes on part-time employment have received $38,610 under the plan, making a grand total of 2,191 employes assisted and $108,598.47 paid out up to the end of February. The plan provides for payments into the fund of one per cent of wages by employes, which is matched by an equal contribution by the company during normal periods of employment; and during any emergency, such as has now been declared, all employes whose earnings are 50 per cent or more of normal, including all salaried workers from president to office boy, contributed one per cent to the fund, which is also matched dollar for dollar by the company.

This is a splendid record of self help within an industry and might well be emulated by the rubber industry to its credit.

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

OVERMAN SUES GOODYEAR FOR TIRE INFRINGEMENT

A suit to recover damages of more than $500,000 for alleged infringement of patent rights pertaining to certain improvements in the manufacture of cushion tires was filed in the federal district court at Cleveland on February 17 by the Overman Cushion Tire Company, Belleville, N. J., against the Goodyear Tire & Rubber Company. Two makes of Goodyear tires—the Goodyear pneumatic cushion and the Goodyear super-pneumatic cushion—are manufactured by a method which was patented by Max Cyrus Overman, the suit claims.

A restraining injunction and an accounting of profits are asked.

DEXTER RUBBER COMPANY LIABILITIES AT $172,715

A detailed statement of the condition of the Dexter Rubber Corporation, now in receivership, shows liabilities of $172,715 and assets of $16,639, exclusive of plant and machinery. The principal creditors listed are Twin Tape Corporation, $74,313; J. E. Brenner & Company, $56,539; and Goshen Co-operative Savings & Loan Association, $9,000, secured.

The company, which manufactured tire repair materials and adhesive tapes, had a factory at Goshen, N. Y., and offices in New York City. It was petitioned into bankruptcy in federal court on December 30, and the Irving Trust Company, New York City, was appointed to act as receiver.

MANVILLE-JENCKES IS PUT IN RECEIVERSHIP

The Manville-Jenckes Company, large manufacturers of tire fabrics and other textile materials, was put into the hands of temporary receivers February 28. The company employs 6,500 operatives in its Rhode Island plants at Pawtucket, Central Falls, Manville and Woonsocket, and 2,500 in its mill at Gastonia, N. C.

The receivership was asked by F. L. Jenckes, Charles D. Owen and J. Richmond Fales, stockholders, for the purpose of insuring uninterrupted operation pending the perfection of reorganization plans. Zenas W. Bliss, state tax commissioner, and Dexter Stevens, president of the company, were named as temporary receivers, and hearing on the appointment of permanent receivers was set for March 17.

Goodrich Cuts Salaries

The B. F. Goodrich Company has reduced the remuneration of all salaried employes 10 per cent, according to an announcement made March 2. The cut is effective throughout the entire organization and all subsidiaries, according to the statement, and affects all employes from the highest executives down.

Firestone Adds Employes

During the past month the Firestone Tire & Rubber Company of California has added 100 employes to its payroll at its Los Angeles factory. This brings the total at the present time to approximately 1,600.

STANDARD TIRE COMPANY FACTORY IS PURCHASED

The plant and property formerly owned by the Standard Tire Company at Willoughby, O., were purchased from the estate of the late R. G. Firestone on February 24 by Percy Wenham, president of the Willoughby Express Company. Mr. Wenham will employ a part of the property for his trucking business, but will hold the factory ready to be leased.

The plant was originally used by the American Fork & Hoe Company and was acquired by the Standard Tire Company in 1919. This company manufactured tires and tubes for several years there, but the factory has been idle since the death of Mr Firestone, owner of the firm.

CORDUROY TIRE COMPANY RE-ELECTS ITS OFFICERS

At their annual meeting February 17, stockholders of the Corduroy Tire Company, Grand Rapids, Mich., unanimously re-elected the entire board of directors and extended to the officials of the company a vote of thanks for the good showing made by the organization despite the particularly adverse conditions in the rubber industry. At the directors' meeting following the stockholders' session, the following officers were reelected: L. A. Brown, president; C. S. Dickey, vice-president; Mervin J. Goldner, secretary; and B. T. Schall, treasurer.

The company's financial statement at the close of the fiscal year showed quick assets at six times current liabilities. It was reported that orders during the past few weeks had shown substantial increases and that indications from many sections of the country pointed to a large volume of spring business, which would soon enable the factory to operate at normal capacity.

RUBBER FREIGHT RATES REDUCED BY RAILROADS

Reduction from 47 cents per hundred pounds to 40 cents per hundred pounds in the railroad freight rate on crude rubber from the port of New York to Akron, effective March 1, was announced by W. R. Hubbard, foreign trade manager of the Akron Chamber of Commerce. The railroads also increased the minimum rate to include loadings of 60,000 pounds.

By fixing a definite rate on crude rubber, the railroads have removed it from the merchandise list and thus saved it from the fluctuations of this type of railroad freight.

RUBBER GOODS FACTORY IS OPENED IN TOLEDO

The American Floor Surfacing Rubber Products Company started operations last month in a remodeled two-story brick factory building adjoining the plant of its parent company, the American Floor Surfacing Machine Company, in Toledo, O. While the parent company will take about half of the production on the new rubber factory, a business in miscellaneous household rubber products and mechanical goods will be built up with an independent sales force.

C. E. Lavendar, formerly of Akron, is general manager of the new company. For several months previous to the opening of the new factory, Mr. Lavendar had supervised the production of rubber parts for the American Floor Surfacing Machine Company in a small shop in Toledo. There, however, materials were received already mixed and ready for the finishing processes.

The new rubber factory opened last month with 50 workers, but this force will be augmented when business conditions improve. William B. Frey is president of the American Floor Surfacing Machine Company, and Harry H. Wolfe is vice-president.

Baldwin Declares Dividend

The Baldwin Rubber Company has declared the regular quarterly dividend of 37½ cents on its outstanding Class A stock. The dividend is payable March 31 to stock of record as of March 20.

India Tire Output Increased

Heavy increases in sales have resulted in a stepping up of production 15 per cent, according to officials of the India Tire & Rubber Company, Mogadore, O. This increase brings production up to 80 per cent of the previous record peak, it was stated.

UNITED CARBON COMPANY EARNED $704,600 IN 1930

The United Carbon Company and subsidiaries report for the year ended December 31, 1930, a net profit of $704,600 after depreciation, depletion, interest, taxes, inventory write-down, etc., equivalent, after dividends paid on 7 per cent participating preferred stock, to $1.43 a share on 397,885 no-par shares of common stock outstanding at end of year, including 36,300 shares held in treasury. This compares with net profit in 1929 of $1,314,555, equal, under the participating provisions of the shares, to $10.49 a share (par $100) on 27,055 shares of 7 per cent participating preferred stock and $2.62 a share on 393,073 common shares outstanding at end of that year.

Net profit for 1930 includes $338,906 profit from sale of properties against a similar profit of $344,429 in preceding year. Net sales for year ended December 31, last, amounted to $3,541,140, against $4,321,732 in 1929.

"In spite of increased sales volume in 1930," Oscar Nelson, president, says, "reduced prices resulted in material decreases in net earnings from the carbon black department. During the year carbon black production exceeded shipments and inventories continued to increase. Consequently, the management materially curtailed production in 1930 in order to reduce the spread between output and demand."

ST. JOSEPH LEAD COMPANY EARNED $1,509,991 IN 1930

The report of the St. Joseph Lead Company and subsidiaries for the year ended December 31, 1930, shows a profit of $4,076,460 after depreciation, federal taxes and minority interest, but before depletion, equivalent to $2.09 a share (par $10) on 1,950,462 shares of stock comparing with profit of $9,730,742 or $4.99 a share before depletion in 1929. Net profit after depletion for 1930, amounted to $1,509,991, equal to 77 cents a share against $7,466,002 or $3.83 a share in previous year.

The 1930 earnings exclude loss on sale and write down of securities amounting to $243,855 which has been charged against reserve for contingencies while the 1929 earnings include profit of approximately $790,000 on sale of securities.

Surplus after dividends was $534,756 as against $1,614,628 for 1929. The company showed deficits after dividends in 1927 and 1928.

Foote Brothers 1930 Loss

The report of Foote Brothers Gear & Machine Company, Chicago, Ill., for the year ended December 31, 1930, shows an operating loss of $772,073. After special deductions for sale of properties and provisions against inventories and payment of $168,723 in dividends, total deduction from surplus amounted to $2,009,161. In the previous year, the company showed a net income of $612,618.

Hood Closes for Fortnight

The Hood Rubber Company, subsidiary of the B. F. Goodrich Company, will shut down for a fortnight beginning March 9 its major footwear departments, involving about 50 per cent of total plant capacity at Watertown, Mass. The remaining mechanical and other departments will continue in operation.

Goodyear Blimp Enlarged

The Volunteer, small dirigible of the Goodyear Tire & Rubber Company, has been enlarged from 85,000 to 95,000 cubic feet gas capacity and is again in service at Los Angeles. Pilot V. L. Smith is in charge of the blimp as commander.

Lee Joins Safety Council

The Lee Rubber & Tire Corporation, Conshohocken, Pa., has been admitted to membership in the Rubber Section of the National Safety Council. W. E. Hansen, purchasing agent of the company, will act as representative of the firm in Safety Council activities.

Reclaiming Plant Safety Record

The U. S. Rubber Reclaiming Company, Buffalo, N. Y., completed the year 1930 with a reduction of 58 per cent in accidents over 1929. The last accident at the factory was on August 18, 1930.

Corduroy Tire Safety Record

The Corduroy Tire Company finished the year of 1930 and as far back as September 13, 1929, with one lost time accident, involving five lost time days, thus winning the honor plaque from the Grand Rapids Safety Council for the fourth consecutive time in the Inter-Plant No Accident Contest. During 1930, the number of employes of the company averaged 244 and the total of hours worked was 598,339, resulting in a lost time accident frequency rating of 1.67 and a severity rating of .008.

MANSFIELD TIRE FACTORY BETTERS SAFETY RECORD

The Mansfield Tire & Rubber Company, Mansfield, O., showed a marked improvement in its accident experience for 1930. With 1,080 employes working 2,291,337 man hours, the company had 73 accidents causing a time loss of 1,597 days, as compared with 164 accidents and 3,890 days time loss in 1929. The frequency rate was 31.85 and the severity .69 as compared with a frequency of 55.26 and a severity of 1.31 in 1929.

The advance made in accident prevention by this company is shown by comparison with the record for 1927. In that year, with 114 fewer employees than in 1930 and working 81,129 less man hours, the record was 215 accidents and 2,432 days time loss, a frequency of 97.27 and a severity of 1.1.

P. M. Wooden is safety and personnel director of the company and he is naturally gratified that an improvement of 28 per cent was made in the year just closed and that nine departments of the plant had clear records for the year. Four of these also scored 100 per cent for 1929.

RUBBER EXPORT MANAGER FINDS TARIFF IS AN AID

"The American protective tariff is a safeguard for our domestic trade and a real aid to our export trade in the long run," declared H. Austin Lengs, export manager of the Oak Rubber Company, Ravenna, O., in a talk on February 18 before the Akron Export Club. Expert critics, he pointed out, overlook the fact that our protective tariff is directed only against goods that would cause injurious competition in our home market to our own producers.

"Two factors enter consideration in export problems," Mr. Lengs stated. "First, the question of whether a country erecting a tariff is an industrial country or an exporter of raw commodities, and, second, whether the tariff is for purposes of revenue or protection. We are in a peculiar position from other countries, as we are nearly self-supporting within our borders.

"Another American advantage is the large market of domestic consumers. No other country has such a healthy middle class buying power. It is this middle class that consumes most of our industrial production."

Graduates Flying Squadron

Annual graduation exercises for the flying squadron of the Goodyear Tire & Rubber Company were held February 28 at the Goodyear Theatre in Akron. Diplomas were awarded to 68 graduates of the production squadron, 17 graduates of the engineering squadron and 10 members of the apprentice school. Four members of the production squadron were not present, having been assigned several weeks ago to the new Goodyear factory at Argentina.

Rubber Stocks Are Stronger

Securities of leading rubber companies shared in the general upward trend during the past fortnight, with twelve of these issues rising to new high levels for 1931. Together with other stocks, however, rubber company shares also fell off somewhat in the final days of the period. Closing prices on March 4, compared with the close on February 18 and with the high and low for the year, follow:

	Last Price		—1931—	
	Mar. 4	Feb. 18	High	Low
Aetna	—	—	5	3¾
Ajax	—	—	½	¼
American Hard Rubber	—	—	—	—
Dayton "A"	—	—	—	—
Falls	—	—	—	—
Faultless	—	—	37	35
Firestone	—	17⅝	18¼	17
do. 6% pfd.	60½	—	63	56½
Fisk	⅞	¾	⅞	½
do. 1st pfd.	2½	—	3	2
General	95	—	95	81
do. pfd.	—	85	87½	83
Goodrich	17¾	17¼	20⅜	15¼
do. pfd.	64	—	68	60
Goodyear	47¼	45¼	52¾	38⅜
do. 1st pfd.	—	—	91	81
India	—	—	13½	8⅜
Intercontinental	4	3	4½	2
Kelly-Springfield	2⅛	1⅞	2½	1⅜
do. 6% pfd.	—	—	35	35
Lee	4	3⅝	4	3⅛
Mohawk	—	—	5½	3
do. pfd.	—	—	—	—
Norwalk	—	1	1	½
Pirelli	—	—	38⅞	31⅞
Raybestos-Manhattan	24	25¼	28⅝	18⅝
Seiberling	6¼	5¼	7½	4¾
do. pfd.	35	—	40	33
U. S. Rubber	15¾	14⅛	17⅛	11⅝
do. pfd.	28¼	27	33½	20¾

Names in the News

WILLIAM O'NEIL, president of the General Tire & Rubber Company, was the principal speaker at the annual Pacific coast district conferences of that company last month, which were attended by more than 100 dealers and factory representatives. Other company executives who attended the sessions, which were held in Los Angeles, included L. A. MCQUEEN, assistant sales manager; FRANK GABLE, factory manager; BEN STILLER, merchandise manager; C. J. DURBAN, manager of the Retain-air tube sales department; Ross FLATT, in charge of truck tire sales; GEORGE WOLFE, head of the General Tire Acceptance Corporation; and T. S. CLARKE, credit manager.

B. W. ROWLAND, formerly in charge of the colloidal research of the Goodyear Tire & Rubber Company, has been appointed research associate in the recently organized Institute of Paper Chemistry, Appleton, Wis.

WALTER C. KEYS has resigned his position as chief engineer of the automotive development department of the United States Rubber Company after four years in that post. He plans to continue his automotive sales and engineering work and has established an office in the Stephenson Building, Detroit, Mich. Mr. Keys, after being graduated from the University of Michigan in electrical engineering in 1907, worked four and one-half years as assistant chassis engineer with the Cadillac Motor Car Company, five years with the Standard Parts Company, and four and one-half years with the Gabriel Company as sales engineer.

JAMES WALTER LOVATT, of the firm of Lovatt Brothers, 42 Broadway, New York City, has been admitted to membership in the Rubber Exchange of New York, Inc.

J. E. LADOW, secretary and treasurer of the Mansfield Tire & Rubber Company, was the principal speaker at the luncheon meeting of the Anima Club held on February 21 at the Mansfield-Leland Hotel, Mansfield, O. He traced the history of the rubber growing and manufacturing industries.

C. B. O'CONNOR, general sales manager of the B. F. Goodrich Company, presided over the annual sales and advertising conference of the Miller Rubber Company and the Hood Rubber Company at Akron on February 26 and 27. He was assisted by WILLIAM SEWALL, advertising manager, and V. C. CRISWELL, sales manager of Hood and Miller, in conducting the conference, which was attended by 45 salesmen and district managers.

ROBERT J. STOKES, president of the Thermoid Company, has been named vice-president of the Woven Steel Hose & Rubber Company, Trenton, N. J., and JOSEPH O. BAUR, of the Thermoid organization, has been appointed secretary-treasurer of Woven Steel Hose. HORACE B. TOBIN retains his position as president of the Woven Steel Hose & Rubber Company, which was recently acquired by the Thermoid Company.

FRED M. HARPHAM, vice-president of the Goodyear-Zeppelin Corporation, predicted transoceanic dirigible travel on regular schedules in a radio talk over station WTAM at Cleveland on February 19.

FRANK S. HARKINS has been appointed manager of advertising and sales promotion of the tire department of the United States Rubber Company, succeeding GEORGE N. WALKER, who recently resigned to become

F. S. HARKINS

advertising manager of the Vacuum Oil Company. Joining the United States Rubber organization about a year ago, Mr. Harkins served as Detroit district manager and later as sales promotion manager, which position he will retain in addition to his duties as advertising manager. Previous to joining the United States Rubber Company, he was connected with the B. F. Goodrich Company in Akron as manager of national advertising and later as manager of its San Francisco branch.

DR. H. N. WHITFORD, manager of the crude rubber department of the Rubber Manufacturers' Association, returned to New York City from the Far East on February 27.

NORMAN H. KEELING has been appointed southwest district advertising manager of the B. F. Goodrich Company. He was formerly connected with the sales and advertising departments of the Miller Rubber Company.

P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, has been proposed for the board of directors of the United States Chamber of Commerce, representing the district which includes Michigan, India, Ohio and Kentucky. He is now a member of the board of the chamber.

RUSSELL V. CLINE has resigned from the advertising department of the Firestone Tire & Rubber Company after 17 years of service. Starting as a clerk, Mr. Cline won several promotions and has acted as both assistant advertising manager and advertising manager of the Firestone organization. Prior to his connection with Firestone, he had worked for a while in the adjusting department of the B. F. Goodrich Company.

H. G. BOBBITT, former southwest district manager of the General Tire & Rubber Company, has been promoted to the post of assistant sales manager of the company. He succeeds BEN HERR, who recently resigned.

LYNN A. WATT was elected by the board of directors of the Monsanto Chemical Works, St. Louis, Mo., as assistant vice-president in charge of commercial research and technical service. He has been associated with Monsanto for the past 11 years and will continue his work with development and technical problems.

A. H. ROTH, formerly in the office of T. G. GRAHAM, first vice-president of the B. F. Goodrich Company, has been transferred to the sales department of the firm. Mr. Roth has been with Goodrich five years and was secretary of the 1929 Silver Fleet which made a 30,000 mile road test throughout the country.

R. S. WILSON, vice-president and sales manager of the Goodyear Tire & Rubber Company, predicted a steady recovery from the business depression in a talk before a company sales convention at New York City on February 20. I. M. QUINN, manager of the New York branch, also spoke, stating that the outlook for Goodyear indicates a substantial increase in sales over 1930.

CHARLES C. GOODRICH, director of the B. F. Goodrich Company, has returned to his seat in the Maine House of Representatives following a six weeks' illness.

E. V. NAGY has been elected secretary and treasurer of the Ionic Engineering Company, Cleveland, O., recently formed to market the Ionic electric water softeners produced by the Shomer Company. Mr. Nagy was recently general sales manager for the Northern Rubber Company.

H. W. MAXSON, public relations manager for the B. F. Goodrich Company, addressed members of factory and office executive staffs of the company at a management meeting at Akron on February 19. He outlined the value of publicity and traced the relation between industrial enterprises and the press of the country.

DR. HUGO ECKENER, commander of the Graf Zeppelin, has just arrived at Akron to confer with Goodyear officials.

Rubber News Around the World

TIRES MOUNTED ON HUBS PREDICTED BY R. T. BROWN

"The tire of the future will probably be totally different in shape from the tires of today, and will be mounted on a hub rather than a rim," predicted R. T. Brown, development manager of the Goodyear Tyre & Rubber Company (Great Britain), Ltd., at a joint meeting of the Institution of the Rubber Industry and the Institution of Automobile Engineers, held in Birmingham last month.

Mr. Brown pointed out that in America tire sections are again becoming larger, pressures are lower, and rims are steadily shrinking; on three new American cars rims of only 17-inch diameter are used. The logical development, he concluded, will be to abolish spokes and adopt a new construction, in which the tire would virtually be mounted on a large hub.

C. R. F. Engelbach, of the Austin Motor Company, Ltd., read an interesting paper on "Tires from the Standpoint of the Car Manufacturer." He suggested that to keep pace with the increased reliability of the motor car chassis, tire makers should aim at a minimum tire life of 25,000 miles. Research work, he said, should be instituted to obtain more silent running, a small absorption of power, greater freedom from punctures, and a better retention of inflation pressure.

SEEK CZECH PRICE PACT ON MECHANICAL GOODS

Since the liquidation of the cartel between the principal Czechoslovak manufacturers of mechanical rubber goods on January 1, 1930, conditions in this branch of trade have shown no improvement. Semperit and Kudrnac, the two strongest firms manufacturing these products, have been engaged in a price dispute and have forced prices down to a point said to be below the cost of production. Prices are so low and are changing so rapidly that for the last few months practically all foreign competition has been shut out.

It is reported that negotiations are now under way to end the price controversy and to establish a general sales or control office which will attempt to fix sales quotas for the domestic manufacturers and to stabilize prices.

Dunlop Loses Golf Ball Suit

Judgment has been given against the Dunlop Rubber Company, Ltd., in its case to attempt to restrain Golf Ball Developments, Ltd., from alleged infringements upon certain registered designs for golf ball markings. It was claimed that the latter company's Penfold and Bromford balls infringed upon the design of the Dunlop Maxfli golf ball, but the court held that there was no infringement and dismissed the action.

Indian Footwear Market

Japanese supremacy in the British India market for rubber footwear is almost undisputed at the present time, about 85 per cent of the total footwear imports in 1930 having originated from Japan. Up to a year or so ago Canada and the United States were leading the countries exporting to this market, but the tremendous decline of American and Canadian exports, and at the same time the rising Japanese exports to India, have more than reversed the situation. So strong have been Japanese exports to India that even in 1930, when a decline would be expected, total imports into India of footwear of all kinds, except leather, have increased considerably over 1929.

GOODRICH SUBSIDIARY ORGANIZED FOR CHILE

The Goodrich Rubber Company of Chile recently was incorporated in Columbus, Ohio, with a capital of $25,000. The company will take over distribution of the B. F. Goodrich Company products in Chile.

Incorporators were G. T. Kilmon, F. C. Leslie and E. L. Nutt, representatives of the Goodrich legal department in Akron, O.

TIRE FABRIC EXPORTS RECORD SHARP DECLINE

Exports of both cord and other tire fabric from the United States during 1930 registered a sharp decline from the totals of the previous year. Shipments of cord tire fabric amounted to 946,239 square yards, valued at $356,336, as against 1929 exports of 4,969,963 square yards, worth $2,217,421.

Exports of other tire fabrics in 1930 totaled 559,192 square yards, with a value of $212,462. During the previous year, shipments of such other fabric amounted to 1,355,239 square yards, worth $472,945.

IMPORTS OF GOLF BALLS REFLECT CUT IN PRICE

Imports of golf balls into the United States during January numbered 10,896, valued at $2,661, a unit value of 24.4 cents a ball as compared to 32.9 cents in December and 32.7 cents in November. The imports were comprised of 9,213 balls from the United Kingdom and 1,683 balls from other countries. While the imports from the United Kingdom were the lowest for any month in recent years, the imports from other countries exceeded the number received from countries outside of the United Kingdom in the full years of 1929 and 1930 combined.

Domestic imports of golf balls last year totaled 1,841,317 balls with a value of $601,993. Imports in 1929 amounted to 2,550,357 balls, valued at $806,654.

TAN KAH KEE TO SHIP FOOTWEAR TO ENGLAND

It is reported that Tan Kah Kee, British Malayan manufacturer, has sold a trial order of 100,000 pairs of his canvas rubber-soled shoes to England at 25 cents a pair. The original order, it is understood, had been for 500,000 pairs, but the buyers cut this down to a fifth. A. & T. Bata, prominent Czechoslovakian manufacturer, tried for the same order, but refused to lower its price of 28 cents a pair to take it away from Tan Kah Kee.

The shoes will be shipped in Tan Kah Kee's usual packing, and it is problematical how this packing with its Chinese characters will be received in Great Britain. It has been reported that Tan Kah Kee has plans for shipping rubber footwear to other European countries, especially Czechoslovakia, the home of Bata, to Australia, and to Africa.

UNITED STATES IMPORTS 8,468 TIRES DURING 1930

Imports of rubber tires into the United States last year were higher, but their total value was less than in 1929 because of lower unit prices. In 1930, this country imported 8,468 tires with a value of $85,125, as against 1929 imports of 5,540 tires, worth $100,367. These imports, of course, are negligible in comparison with American exports of approximately 2,500,000 casings in the past year.

United States imports of other rubber manufactures last year amouned to $1,242,544, as against a total of $2,219,470 in 1929.

Dunlop Cuts Tire Prices

The Dunlop Rubber Company, Ltd., has reduced its prices on standard quality passenger car tires, according to cable reports early this month. The cut in price averages about 7½ per cent.

U. S. Drug Sundries Imports

During the year of 1930, the United States imported druggists' rubber sundries to the value of $229,269. Of this total, drug sundries to the amount of $124,380 were imported from Germany and drug sundries worth $88,127 from the United Kingdom. The remaining imports were scattered among seven countries.

Canadian Tennis Shoe Exports

Canadian exports of 6,168,000 pairs of canvas rubber-soled footwear during 1930 exceeded the United States shipments of 4,739,000 pairs. Canadian exports of rubber boots and shoes at 1,730,000 pairs were, however, below the United States shipments of 2,119,000 pairs of rubber shoes and 97,000 pairs of rubber boots.

Rubber Goods and Specialties

Essex Play Ball

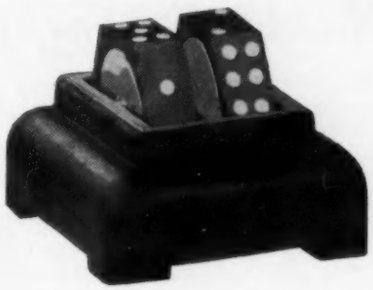
The Essex Rubber Company, Trenton, N. J., is now offering to the trade a new and attractive beach ball under the name of the World of Fun Play Ball. This is made in assorted colors, with individual colors of red, blue, green and orange, in two-color combinations, and in mottled effects. The

ball is easy to inflate and has no bladder. It has a patented adjustable valve which is disappearing and invisible. The ball is blown up, the valve stem rolled tightly and inserted inside the ball, which is then ready for action. According to the manufacturer, this ball will stand heavy pressure tests and bounces most buoyantly. Deflation is quickly and easily accomplished by pinching the ball at the valve with the thumbs and forefingers. The ball is offered in sizes from 10 to 24 inches at different prices.

Lather Quick Sponge

The Garfield Rubber Company, 3055 Lawrence Avenue, Chicago, Ill., has introduced the Lather Quick rubber sponge. A slit is provided at one end of this sponge, in which

either large or small pieces of soap may be inserted. The top and bottom are perforated, and the air forced through by an occasional squeeze uses up small bits of soap and produces a quick lather with clean water. Made in modern colors and in a size to be held comfortably in the hand, it can be used both in the bath and in washing dishes.



Jondice Dice Wheel

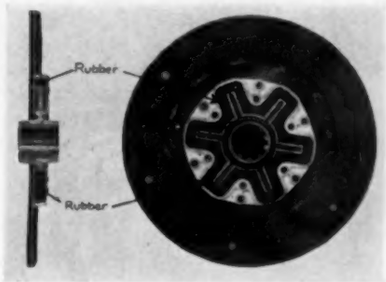
A new and convenient form of dice for the many games to which that equipment is essential has been brought out by Weber Manufactory, Inc., Brooklyn Station, Cleveland, O. This consists of a wheel, containing the usual dice characters, which is easy to read and simple to operate. The base and wheels are of rubber, and the feet are vacuum cupped. The device is made with one, two, three, four and five wheels for various games, either with dice characters or with playing card designs, "Put and Take" symbols, or other letters and numbers for games. The wheel is spun by merely moving the palm of the hand across the top, and the result is on the top face of the wheel. One of its greatest advantages is in eliminating the necessity for searching for lost dice.

Goodrich Hiflex Belting

Under the name of Hiflex belting, the B. F. Goodrich Company is offering a new power transmission belting that is designed to recover to its normal condition and stand up under constant flexing without losing its elasticity. A special rubber compound has been employed in its manufacture to enable it to withstand heavy strain without failure.

Clutch Vibration Damper

The Borg & Beck Company, subsidiary of the Borg Warner Corporation, 6558 South Menard Street, Chicago, Ill., has brought out a new vibration damper for its clutches. This damper has an aluminum retainer riveted directly to the main clutch plate. There is a free space between a rubber member and



the hub which aids in the absorption and reduction in chafing. It has six spokes that are cushioned by a molded rubber member retained in an aluminum die casting. The drive is conveyed without metal-to-metal contact, and the manufacturer claims as a result quicker and more complete absorption of vibration, greater quietness, longer service ability, and less chafing of rubber members.

Skate Tire Patent Upheld

The Chicago Roller Skate Company, Chicago, Ill., was successful in its suit brought recently in the United States Circuit Court of Appeals at Cincinnati, O., claiming infringement of its Ware patent No. 1,469,433, covering rubber-tired rollers for roller skates. The court handed down a decision in favor of the plaintiff, holding the patent valid and infringed.

Miller Map of World Play Ball

FOLLOWING a considerable amount of research, the Miller Rubber Products Company, Akron, O., has developed a Map of the World Play Ball. According to the manufacturer, this is a type of ball which has been attempted many times before but never successfully produced. The ball inflates to 14 inches in diameter and presents a complete map of the world printed in six colors. The ball itself is all rubber with a bladder.

Current Crude Rubber Items

EXCHANGE DIFFERENTIALS ARE FIXED FOR MARCH

The adjustment committee of the Rubber Exchange of New York on February 24 fixed the price differentials between the various grades of Hevea plantation rubber which shall prevail on all deliveries against the new "A" contracts for the month of March as follows: No. 2 crepe (thick or thin) at 20 points; No. 2 ribbed smoked sheets at 15 points; No. 3 ribbed smoked sheets at 30 point; No. 4 ribbed smoked sheets at 55 points; No. 5 ribbed smoked sheets at 80 points; limit of allowance on No. 2 crepe at 25 points; and allowance on rubber delivered in bales at 13 points.

On February 16 the adjustment committee fixed the price differentials for March against the old "A" contracts as follows: off quality first latex crepe at two-tenths of a cent a pound; good F. A. Q. ribbed smoked sheets at thirty-five one-hundredths of a cent a pound; and ordinary F. A. Q. ribbed smoked sheets at six-tenths of a cent a pound.

FAR EASTERN CLUB IS ORGANIZED AT AKRON

Representatives of Akron rubber companies who have been in the Far East at one time or another have organized the Far Eastern Club to hold "tiffin" or luncheon meetings at least once a month. It is believed that there are probably from 50 to 75 men in Akron who have visited the Far East on business and who would welcome an opportunity to join such an organization.

W. W. Stark, of the crude rubber division of the B. F. Goodrich Company, has been elected president, and A. B. Hill, of the export department of the Goodyear Tire & Rubber Company, has been chosen secretary-treasurer. One of the organizers was E. E. Pardee, of the Firestone Tire & Rubber Export Company.

Rubber is Shipped by Water To Goodyear Tire Factories

GOODYEAR Tire & Rubber Company traffic officials, in checking various shipping figures for the year just closed, stated that the imports of crude rubber for the Goodyear factory at Gadsden, Ala., totaled something over 10,000,000 pounds in 1930, the shipments, mostly from Singapore, coming to Savannah by British steamers and transported from the Georgia port by rail or truck to Gadsden.

"This new addition to commodities clearing through Savannah is of considerable importance to that port," said H. J. Carroll, manager of the Goodyear traffic department, "and practically all of the rubber clearing through Savannah was sold in the finished product throughout the South as tires.

All-Water Rubber Shipments

"It is interesting to note, too, that of the Goodyear shipments of thousands of tons of rubber to Akron from the Far East in the past year approximately 16,000,000 pounds came all the way to Cleveland by water, being taken from the ocean ships at New York, loaded on craft for the Hudson river and the barge canal to Buffalo, and by Lake Erie freighters from Buffalo to Cleveland, from which city it was loaded on trucks for Akron.

"Transportation by water isn't as swift as by rail, to be sure, but in the case of rubber the factories as a rule have large reserve stocks on hand, so immediate delivery of shipments following their arrival in New York isn't required. And there's a worth while saving in freight costs.

"I was greatly interested in some figures presented just a few days ago by Secretary of War Hurley, who said that the all-rail rate from Moline, Ill., to Pacific coast cities is $1.86 per hundred pounds. He stated that agricultural implements could be carried by rail from Moline to the Atlantic seaboard and thence by water through the Panama Canal to the Pacific coast at the rate of $1.18 per hundred pounds.

"The secretary also stated that this freight was being carried from Moline by the Federal barge line and by ocean line through the Panama Canal to the Pacific coast for 75 cents per hundred pounds.

"Secretary Hurley, referring to the farm problem in the Middle West, says that the only practical method of getting cheaper transportation rates for bulk commodities is by the development of the Mississippi river and its tributaries, and with the completion of the Illinois waterway connecting the Mississippi with the Great Lakes, thereby providing an outlet to the Atlantic ocean by one route and to the Gulf of Mexico by another.

May Use Mississippi

"With Secretary Hurley's suggestion carried to fruition cargoes of rubber from the Far East could be shipped across the Pacific, through the Panama Canal, up the Gulf of Mexico and Mississippi river to Lake Michigan and on through Lake Erie to Cleveland. This might mean a big saving in the transportation of the many thousands of tons of rubber consumed annually by the rubber industries in Akron."

Closing Prices on Rubber Exchange of New York, Inc.

FROM FEBRUARY 18 TO MARCH 3, 1931

		Spot	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Sales
No. 1 Standard Contract of 10 Tons															
Feb.	18	7.62	7.55	7.65	7.75	7.85	7.95	8.05	8.15	8.28	8.40	8.50	8.59	——	67
	19	7.56	7.53	7.64	7.72	7.84	7.92	8.03	8.14	8.25	8.35	8.50	8.60	——	57
	20	7.46	7.45	7.55	7.65	7.77	7.90	7.98	8.07	8.20	8.30	8.40	8.50	——	71
	21	7.42	7.36	7.48	7.60	7.70	7.80	7.90	8.00	8.12	8.23	8.35	8.46	——	13
	24	7.35	7.35	7.47	7.60	7.70	7.80	7.90	8.00	8.12	8.23	8.35	8.46	——	40
	25	7.45	7.45	7.56	7.68	7.77	7.86	7.96	8.06	8.18	8.30	8.42	8.54	——	54
	26	7.52	7.48	7.59	7.70	7.80	7.90	8.00	8.10	8.22	8.34	8.45	8.56	——	45
	27	7.62	7.55	7.66	7.78	7.89	8.00	8.09	8.18	8.29	8.40	8.50	8.65	——	64
	28	7.70	7.62	7.73	7.85	7.95	8.05	8.14	8.24	8.34	8.45	8.55	8.68	——	9
Mar.	2	7.73	7.70	7.82	7.93	8.03	8.13	8.22	8.32	8.44	8.53	8.66	8.76	8.86	30
	3	7.90	7.85	7.97	8.10	8.20	8.30	8.43	8.55	8.65	8.75	8.85	8.95	9.05	145
Old "A" Contract of 2½ Tons															
Feb.	18	——	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.40	8.55*	——	157
	19	——	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.40	8.53*	——	18
	20	——	7.40	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.42*	——	56
	21	——	7.30	7.40	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.32*	——	37
	24	——	7.20	7.20	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.32*	——	135
	25	——	7.40	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.42*	——	86
	26	——	7.40	7.50	7.60	7.70	7.80	8.00	8.10	8.20	8.30	8.40	8.52*	——	21
	27	——	7.50	7.60	7.70	7.80	7.90	8.00	8.10	8.20	8.30	8.50	8.62*	——	16
	28	——	7.60	7.70	7.80	7.80	7.90	8.00	8.10	8.30	8.40	8.50	8.62*	——	27
Mar.	2	——	7.70	7.80	8.00	8.00	8.10	8.10	8.20	8.40	8.50	8.60	8.72*	8.82*	28
	3	——	7.70	7.80	8.10	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.82*	8.92*	58

*New "A" Contract

ESTATE RUBBER STOCKS STABLE IN FAR EAST

Crude rubber stocks on Eastern estates amounted to 25,770 tons, dry basis, during January, compared with 25,837 tons at the end of 1930.

Declared production for the month was 20,792 tons on large estates, against 22,341 tons in December.

That for estates under 100 acres in size, however, totaled 18,129 tons, against 16,186 tons during December.

Dealers stocks were larger, amounting to 19,515 tons, compared with 18,686 tons for the previous month.

J. A. Sisto Rejoins Exchange

At a meeting of the board of governors of the Rubber Exchange of New York, Joseph A. Sisto, of J. A. Sisto & Company, was reinstated to full rights and privileges of membership in the exchange. His firm was in financial difficulties last year, but has since been reorganized and has resumed business.

U. S. RUBBER SYSTEM HAS $36,000,000 LIFE INSURANCE

The United States Rubber Company has announced that group life insurance amounting to approximately $2,000,000 is provided for more than 1,000 employes of the Winnsboro Mills, a subsidiary at Winnsboro, S. C., through the extension of a contract between the parent company and the Equitable Life Assurance Society. Under this contract, which originated in 1926, 21,900 employes of the United States Rubber Co. and its other subsidiaries have previously been covered by the Equitable with group life insurance exceeding $34,000,000. As in the original contract, the company and the employes share in paying the cost.

Since May 1, 1926, the Equitable Life Assurance Society has paid to beneficiaries of 524 deceased employes of the United States Rubber Co. and its subsidiaries a total of $763,500 and directly to 79 employes disability benefits aggregating $121,000.

Frank B. Ball

Frank B. Ball, superintendent of the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., died at his home in Passaic, N. J., on February 15 as the result of a stroke suffered the day previous. He was 63 years of age and, although born in Connecticut, had lived in Passaic since infancy.

After working for a time with the Amadon Mills and with the New York Belting & Packing Company in the same city, Mr. Ball joined the Manhattan Rubber Manufacturing Company as master mechanic upon its organization in 1893. He supervised the installation of the original machinery and was in charge of its operation until 1912, when he was promoted to the post of superintendent, which he held until his death. He was a director of the American National Bank of Passaic and of the First National Bank, of Whippany, N. J., and vice-president of the New Jersey Engineering & Supply Company.

Marquis M. Converse

Marquis M. Converse, founder of the Converse Rubber Shoe Company, died on February 9 in Boston, Mass., at 69 years of age. After some department store experience, he became a partner in the firm of Converse & Pike in 1887, acting as sales agents for Wales-Goodyear rubber footwear. Illness forced him to relinquish that connection in 1899, but in 1902 he began a six-year association with the Beacon Falls Rubber Shoe Company as New England sales manager. He organized the firm which is today the Converse Rubber Company in 1908, built it up to an annual sales volume of $5,000,000 by 1918, and retired in 1928.

Arthur J. Wills

Arthur J. Wills, known as the man who sold the first pneumatic automobile tire in America, died at his home in Akron on February 20 at the age of 67. He had been an employe of the B. F. Goodrich Company for 47 years and was a special sales representative at the time of his death.

In 1896, when Alexander Winton was nursing his automobile into popular acceptance, Mr. Wills went to Cleveland as the tire sales manager of the Goodrich company and made the first bona fide sale. Mr. Wills began his career at Goodrich in 1883, five years before the death of Dr. Benjamin Franklin Goodrich, the company's founder. He was one of the three remaining active Goodrich employes who served with the founder.

Frank P. Hamon

Frank P. Hamon, for ten years office manager of the B. F. Goodrich Company, died suddenly on February 17 at East Orange, N. J. Since leaving Akron in January, 1930, Mr. Hamon had been director of business research for Thomas A. Edison, Inc.

While associated with the Goodrich organization, Mr. Hamon was elected president of the National Association of Office Managers in 1925 when that organization met in Akron. Prior to his connection with Goodrich, he had served as assistant comptroller of the Otis Elevator Company, having been with that firm for 19 years.

William T. Mead

William T. Mead, chief engineer and master mechanic of the G. & J. Tire Company for many years, died at his home in Indianapolis, Ind., on February 13 at 67 years of age. He had been associated with the United States Rubber Company for 30 years and had acted for several years as supervisor of safety at the company's plant in Providence, R. I.

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, MARCH 3, 1931

RUBBER

Crude

DURING the month of February, the average daily closing price for ribbed smoked sheets on the New York market was a full half-cent lower than for any previous month in history. Last month's average price was 7.70 cents a pound, comparing with 8.34 cents in January and with 15.85 cents in February, 1930. The lowest previous monthly average was established last October at 8.20 cents a pound.

On only one day in the whole month did the commodity touch 8 cents in the daily closing prices. March, however, has opened slightly more auspiciously with the report that the Dutch rubber growers' committee has left for London for serious discussion with British plantation interests on restriction of production. This report caused a sharp upturn in the market and resulted in a closing price of 8 cents a pound on March 3.

February automobile production was believed to have been higher than that for January, and another increase of close to 25 per cent is looked for in the present month. Some tire companies are reporting replacement sales at increasingly high levels.

Prices quoted on the New York outside market at the close of March 3 were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-Mar.	.07⅞	@	.08
Apr.-June	.08¼	@	.08⅜
July-Sept.	.08⅜	@	.08⅝
First Latex, crepe spot	.08	@	.08⅛
Amber Crepe, No. 2	.07½	@	.07¾
Amber Crepe, No. 3	.07⅝	@	.07¾
Amber Crepe, No. 4	.07¼	@	.07½
Brown Crepe, Clean thin	.07⅝	@	.07⅝
Brown Crepe, specky	.07	@	.07⅛
Liquid Latex, per gal.	.75	@	.85

Paras—

Up-river, fine	.09	@	.09¼
Up-river Medium	Nominal		
Up-river Coarse	.07	@	.08
Acre Bolivian, fine	.09¼	@	.09½
Caucho Ball, Upper	.07	@	.08
Islands, fine	Nominal		

Centrals—

Central, scrap	.06	@	.07
Esmeraldas	.06	@	.07

Balata—

Block, Colombia	Nominal		
Block, Ciudad	.31	@	.31½

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot-Mar.		@	4¼d
Apr.-June	4⅛	@	4¼d
July-Sept.	4¼	@	4⅜d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot		@	3⅝d

Scrap

After a very weak month, scrap rubber prices strengthened somewhat in consequence of the upward turn in quotations for the crude commodity. The demand from reclaiming plants is naturally not very heavy in view of the large stocks of reclaim already on hand. Late price quotations for the different grades of rubber scrap follow:

(Prices to Consumer)

Auto tire peelings	ton	21.50	@	23.00
Mixed auto	ton	12.00	@	12.50
Bicycle tires	ton	9.00	@	10.00
Clean solid truck tires	ton	24.50	@	26.00
Boots and shoes	cwt.	1.10	@	1.30
Arctics, untrimmed	cwt.	.90	@	1.00
Inner tubes, No. 1	lb.	.04⅝	@	.04⅞
Inner tubes, No. 2, compounded	lb.	.02⅛	@	.02¼
Inner Tubes, Red	lb.	.02	@	.02⅛
Air Brake Hose	ton	10.00	@	12.00
Rubber Hose	ton	9.00	@	10.00

Reclaimed

The demand for reclaimed rubber from tire factories has shown some increase since the first of the year, but not enough for reclaimers to wish to add to their already high stocks. Production, therefore, is not at a very high level. The latest price quotations for the various grades of reclaimed rubber were as follows:

High Tensile				
Super-Reclaim Black	lb.	.07¾	@	.08
High Tensile Red	lb.	.07¼	@	.07½
Shoe				
Unwashed	lb.	.06	@	.06¼
Washed	lb.	.08	@	.08¼
Tube				
No. 1 (Floating)	lb.	.08½	@	.08¾
No. 2 (Compounded)	lb.	.07½	@	.07¾
Tires				
Black	lb.	.05¾	@	.06
Black, selected tires	lb.	.06	@	.06½
Dark Gray	lb.	.07	@	.07½
Light Gray	lb.	.07¾	@	.08
White	lb.	.08¼	@	.08¾
Truck, Heavy Gravity	lb.	.06	@	.06¼
Truck, Light Gravity	lb.	.06¼	@	.06½
Miscellaneous				
Mechanical blends	lb.	.05	@	.05½

COTTON and FABRICS

Cotton

DURING the month of February, the average of the daily closing prices for spot middling upland cotton was 10.96 cents a pound, the same figure as for last November, and the best price with the exception of that month since August, 1930. Last month's average price compares with 10.27 cents in January and with 15.62 cents in February, 1930.

The advance in the cotton market has been due to several factors. The definite improvement recorded during January in the statistical position of domestic standard cotton cloths seems likely to be maintained during the next few months. Sentiment in Lancashire is more optimistic reflecting the settlement of the weavers' dispute and the brighter political outlook in India. The fact that January fertilizer tag sales were 28 per cent smaller than those of January, 1930, points to a reduction in acreage.

The high, low and closing prices for the commodity on the New York Cotton Exchange on March 3 were as follows:

	High	Low	Close Mar. 3	Close Feb. 17
Mar.	11.15	11.08	11.09	10.97
May	11.39	11.29	11.33	11.24
July	11.64	11.53	11.56	11.49

Tire Fabrics

Domestic tire factories used somewhat less cotton fabric last month than during January due to the short month. Quotations for tire fabrics have been rather steadier and slightly higher during the past fortnight in sympathy with the rising cotton prices. Late tire fabric prices follow:

CORD				
Peeler, carded, 23/4/3	lb.	.34½	@	.34¾
Peeler, carded, 23/5/3	lb.	.33	@	.33¼
Peeler, carded, 13/3/3	lb.	.30½	@	.30¾
Peeler, carded, 15/3/3	lb.	.31	@	.31¼
Egyptian, carded, 23/5/3	lb.	.43	@	.43½
Egyptian, combed, 23/5/3	lb.	.47	@	.47½
CHAFERS				
Carded, American, 8 oz.	lb.	.26½	@	.27
Carded, American, 10 oz.	lb.	.26	@	.26½
Carded, American, 12 oz.	lb.	.25½	@	.26¼
Carded, American, 14 oz.	lb.	.25	@	.26
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.26	@	.32
Carded, American, 10¼ oz.	lb.	.26	@	.32
SQUARE WOVEN				
Carded, American, 17¼ oz. 23-11 ply	lb.	.33	@	.33½
Carded, American, 17¼ oz. 10-ply	lb.	.25	@	.25½

Sheetings

The market for sheetings was somewhat mixed during the fortnight, closing practically unchanged from two weeks ago. The latest quotations, as reported by the Textile Brokers Association, follow:

40-inch, 2.50-yard	yd.	.07½	@	.07⅝
40-inch, 2.85-yard	yd.	—	@	.06½
40-inch, 3.15-yard	yd.	—	@	.07¼
40-inch, 3.60-yard	yd.	.06⅝	@	.06½
40-inch, 3.75-yard	yd.	—	@	.05¼
40-inch, 4.25-yard	yd.	—	@	.04¾

Ducks

Hose and belting ducks were somewhat stronger at the end of the fortnight, but other grades showed declines in price. The market continued to be weak, with quotations closing as follows:

Belting and Hose	lb.	.23½	@	.24
Enameling	lb.	.22	@	.22½
Single filling	lb.	.10	@	.10½
Double filling	lb.	.11	@	.11½

CHEMICALS

THROUGH another half-cent reduction, the price of carbon black was brought down last month to a new low level. Demand for this compounding material has improved in recent weeks, but due to the resumption of higher production in tire factories rather than to the cut in price. Aside from the carbon black situation, there has been little of material importance to the rubber chemical industry during the past month. Price quotations have remained steady, with demand from factories gaining normally.

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16
Captax	lb.		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.75 @	—
Pipsol	lb.	4.30 @	4.50
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermio F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.25½@	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.07¾@	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.36
Ultramarine	lb.	.06 @	.32
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½
Reds			
Antimony crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden, 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Maroon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Smith's 444 Crimson f.o.b. Springfield	lb.	.08¾@	.10
Rub-Er-Red, f.o.b.Easton	lb.	.08¾@	—
Venetian red	lb.	.08 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.80
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanium oxide	lb.	.21 @	—
Titanox B, f.o.b. St. Louis,	lb.	.06½@	.07
Titanox C, f.o.b. St. Louis,	lb.	.07 @	.07½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅞@	.06⅞
Horsehead Brand:			
Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅜@	.10⅞
blue label	lb.	.09⅜@	.09⅞
red label	lb.	.08 @	.08½
St. Joe, black label	lb.	.06½@	.07
red label	lb.	.06½@	.07
Zinc Oxide—French Process			
Anaconda, lead free	lb.	.06½@	.07
Anaconda, selected lead free	lb.	.07 @	.07½
White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅜@	.10⅞
Red seal	lb.	.09⅜@	.09⅞
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.07½@	.07¾
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blacks			
Arrow "Aerofloted"	lb.	.03½@	.08½
Bone Black	lb.	.06 @	.12½
Carbon, compressed	lb.	.03 @	.07
Carbon, uncompressed	lb.	.03 @	.07
Disperso, f.o.b. Louisiana	lb.	.03½@	—
Disperso, f.o.b. Texas	lb.	.036 @	—
Drop Black	lb.	.06 @	.14
Fumonex	lb.	.03½@	.07½
Excello, compressed	lb.	.04 @	.08
Gastex, f.o.b. Texas	lb.	.03 @	.06
Lamp Black	lb.	.10 @	.40
Micronex	lb.	.03½@	.08½
Thermatomic-Thermax	lb.		
Flex	lb.		
P-33	lb.		
United carbon, fob Tex.	lb.	.03½@	.08½
Velvetex carbon	lb.	.03 @	.06
Blanc fixe dry f.o.b. works	ton	75.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, Kaolin, domestic	ton	8.00 @	9.00
Aerfloted, Suprex	ton	8.00 @	20.00
Colloidal	lb.	.05 @	.08
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Mineral Flour, c.l. f.o.b. mine	ton	20.00 @	23.00
Par	ton		
Tensulite		15.00 @	—
Glues, extra white	lb.	.25 @	.26
medium white	lb.	.22 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.42 @	3.52
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	— @	1.00
English cliffstone	cwt.	1.75 @	2.00
Quaker	ton		
Superfine	ton	10.00 @	12.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.20 @	.23

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Paradura	ton	62.50 @	65.00
Parmr, solid	ton	28.00 @	48.00
Pioneer. MR, solid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	— @	.31½
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.13 @	.17
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	2.90 @	—
Soda ash, 58% C.L.	cwt.	1.17½@	—
Oils			
Corn, refined, bbls.	lb.	.08¾@	.10½
Cottonseed, crude		.06⅛@	.07
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c.l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.05¼@	.06
Niger	lb.	.04¾@	.05¼
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.18 @	.28
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.54 @	.55
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	7.00 @	—
Rosin, grade K, 280 lb.	bbl.	— @	5.80
Pigmentar	gal.	.18 @	.28
Tar Retort, 50 gal.	bbl.	13.50 @	15.00
Solvents			
Acetone, pure	lb.	.10 @	.10½
Alcohol, denatured, No. 1 bbls.	gal.	.40 @	.47
Benzol, 90%	gal.	.21 @	.23
Carbon, bisulphide	lb.	.05½@	.06¼
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.30 @	.38
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.43¼@	.43½
wood	gal.	.37 @	.39
destructively distilled	gal.	.35 @	—
Waxes			
Beeswax, white	lb.	.34 @	.36
Carnauba	lb.	.26 @	.28
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02½@	—
White crude scale 124/126	lb.	.02½@	—
Refined, 125/127	lb.	.03⅝@	—
Refined, 128/130	lb.	.03¾@	—
Refined, 135/137	lb.	.05¼@	—
Refined, 138/140	lb.	.07¼@	—

ANTI-OXIDANTS

Agerite, Resin	lb.		
Powder	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Vandex	lb.		

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

DESPITE a pick-up in automobile production, it seems apparent that tire output is still lagging behind expectations. Crude rubber consumption in February was again below net imports with a resultant increase to domestic stocks. Net imports were only slightly below those of January, but rubber absorption, due in part to the short month, was lower.

American inventories of crude rubber are, therefore, at a new high record. Meanwhile, stocks in other countries have not been decreasing. Warehouse stocks in London and Liverpool on February 28 totaled 126,961 long tons as against 125,111 long tons on February 14. French stocks are still very high, and inventories of the commodity in the Far East are not shrinking.

Publication of the Rubber Manufacturers Association questionnaire statistics for the full four quarters of 1930 shows that actual domestic rubber consumption last year totaled 371,120 long tons. Net imports into this country were 451,877 long tons, leaving a surplus of 80,757 long tons which were added to the carryover from 1929.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1928:							
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,336	1,349,690	21.24	48,825
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,232,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.	38,163	16,192,261	18.94	2,614	1,190,510	20.33	35,549
Nov.	43,507	18,189,305	18.66	2,929	1,300,354	19.82	40,578
Dec.	42,952	17,573,330	18.27	2,745	1,007,279	16.38	40,207
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,653,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,532	14.82	42,735
May	42,692	13,373,232	13.98	3,154	1,085,432	15.37	39,538
June	39,993	12,215,848	13.79	3,125	1,027,136	14.67	36,868
July	35,182	10,553,944	13.39	2,732	736,863	12.04	32,450
Aug.	35,713	9,666,362	12.08	2,194	646,667	13.16	33,519
Sept.	35,380	8,460,812	10.68	1,509	429,789	12.72	33,871
Oct.	46,069	9,393,980	9.59	2,054	342,331	7.57	44,015
Nov.	29,401	5,700,086	8.66	1,296	271,847	9.37	28,105
Dec.	37,306	7,175,242	8.59	2,168	542,197	11.17	35,132
1931:							
Jan.	36,307	7,190,591	8.84	1,706	350,480	9.17	34,601
Feb.							
Mar.							
Apr.							
May							
June							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1924	1925	1926	1927	1928	1929	1930	1931
Jan.	29,058	29,638	32,196	31,518	34,403	43,002	35,872	28,557
Feb.	25,736	29,761	31,136	30,137	33,702	41,594	32,014	.....
Mar.	28.385	33,498	32,936	36,141	35,688	44,730	35,134	.....
Apr.	27,120	34,130	32,696	35,871	32,772	47,521	30,333	.....
May	25,845	35,322	29,364	34,592	37,333	49,233	30,035	.....
June	22,753	35,822	28,598	33,801	37,676	43,227	33,890	.....
July	23,396	36,053	27,577	29,219	37,407	41,526	29,245	.....
Aug.	28,982	35,909	34,533	33,460	42,927	38,274	30,575	.....
Sept.	31,497	31,691	32,904	27,214	39,882	34,707	25,288	.....
Oct.	31,520	29.047	29,836	26,790	40,857	34,800	27,271	.....
Nov.	27,289	28,253	28,080	26,792	37,461	27,659	23,479	.....
Dec.	27,199	28,748	26,293	25,492	31,232	23,531	21,493	.....
Totals	328,769	388,481	366,149	371,027	441,340	469,804	372,628	

Figures on Quarterly Basis

Quarter	1923	1924	1925	1926	1927	1928	1929	1930
Jan./Mar.	96,776	87,609	95,263	94,301	99,216	103,558	128,565	101,610
Apr./June	89,493	75,674	104,099	87,109	103,242	103,500	139,292	112,229
July/Sept.	55,621	83,813	99,493	93,793	89,210	117,573	113,746	85,261
Oct./Dec.	63,617	92,656	85,789	83,212	80,860	117,597	84,872	72,020
Totals	305,507	339,752	384,644	358,415	372,528	442,227	466,475	371,120

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1929	1930	MONTHS	1929	1930
January	22,602,000	25,731,000	July	36,860,000	38,256,000
February	22,776,000	26,509,000	August	37,759,000	37,433,000
March	28,495,000	31,029,000	September	34,193,000	37,823,000
April	32,019,000	34,549,000	October	32,816,000	32,267,000
May	34,117,000	36,497,000	November	31,502,000	30,984,000
June	33,163,000	35,902,000	December	26,550,000	29,094,000

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	3	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	30	31	Ave
1928																													
November	18¾	18⅝	18⅝	—	18⅝	18¾	18⅝	18⅝	—	18¼	18¼	18¼	17⅝	17⅝	17⅞	—	18	18¼	18½	18½	18¼	18¼	—	17⅞	17⅞	—	—	17¾	18¼
December	17¾	—	17⅝	17⅝	18	18	—	18	18	18	18	18	18	18	18	18	18	18	18	18	—	18	18	17⅞	17⅞	—	18½	18¼	18
1929																													
January	—	18¼	18¼	18¼	—	18¼	18¾	18⅝	20	20	20	19¾	17⅝	17⅞	17⅞	—	18	18¼	18½	18¼	18¼	18¼	—	17⅞	17⅞	—	—	22¾	21¾
February	22⅝	22	—	22¾	22¾	22¾	25½	—	—	25¾	25¾	25¾	24⅞	24⅞	24⅞	18	18	18	18	18	23	23	23	26½	26½	23	—	23	24
March	26	22	—	26	26	26½	25½	—	—	25¾	25¾	24¾	24¾	24¾	24¾	18	18	18	18	18	18	18	18	22½	22½	22	23	23	24½
April	23	23¼	—	22½	22½	22½	22½	22½	22½	22½	22½	21½	21½	21½	21½	18	18	18	18	18	19¾	19¾	19¾	19¾	19¾	19¾	—	19¾	21½
May	19⅞	19⅝	19⅝	—	20⅝	21½	22½	21	21	21	21	22½	22½	22½	22¼	20¼	20¼	20¼	20¼	20¼	21¼	21¼	21	21	21	20¾	—	21¼	21½
June	21⅛	21⅛	21⅛	21	21¼	21¼	21	20⅝	22	20½	20½	20½	20¼	20¼	20¼	20¼	20¼	20¼	20¼	21¼	20¾	20¾	20¾	20¾	21⅛	20¾	—	21⅛	21¼
July	20¾	21¼	21	21	21	21	21	20⅝	20⅝	20⅝	20⅝	20⅝	20⅝	20⅝	20⅝	20¼	20¼	20¼	20¼	21¼	20¾	20¾	20¾	20¾	20¾	20¾	—	21⅛	20⅝
Aug.	21⅝	21	21	20½	20¼	20¼	20¼	20⅝	20⅝	20⅝	20⅝	20⅝	20⅝	20⅝	20⅝	20¼	20¼	20¼	20¼	20¼	20¾	20¾	20¾	20¾	20¾	19⅝	20¾	20¾	20⅝
Sept.	—	19½	19½	19⅝	17½	17¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¼	16¼	16¼	16¼	16¼	19¾	19¾	19¾	19¾	19¾	18½	18¾	18¾	19⅝
Oct.	19⅞	17⅝	17⅝	17¾	17¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼
Nov.	17⅝	17⅝	17⅝	17¾	17¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼
Dec.	—	16¼	16¼	16¼	16¼	16¼	—	16¾	16¾	16¾	16¾	16¾	16¾	16¾	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼
1930																													
January	—	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼	16¼
February	16¼	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜
March	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜	16⅜
April	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½	16½
May	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝	14⅝
June	13¾	13¾	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝	13⅝
July	12¼	12	—	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
August	10⅝	—	10½	10½	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼
September	—	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾
October	7½	7½	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼
November	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾
December	9½	9½	9½	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼	9¼
1931																													
January	—	8¾	8¾	8¾	8½	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾
February	—	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾
March	—	7¾	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Month	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents	1931 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14	15.24	8.34
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97	15.85	7.70
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55	15.34	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18	14.93	
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46	14.24	
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64	12.45	
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30	11.24	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59	9.96	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37	8.28	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67	8.20	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	16.62	9.01	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	16.12	9.05	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	20.55	11.98	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Dec.	Jan.	Fer.	Mar.	Day	Dec.	Jan.	Fer.	Mar.
1	4⅝	—	—	—	17	4¼	4⅛	3⅞	—
2	4¾	—	3⅞	3⅞	18	4½	—	3¾	—
3	4¾	4⅛	3⅞	4⅛	19	4⅝	4⅛	3⅞	—
4	4⅝	—	3⅞	—	20	4⅝	4⅛	3¾	—
5	4⅝	4¼	3¾	—	21	—	4⅛	3¾	—
6	4⅞	4¼	3⅞	—	22	4⅝	4⅛	—	—
7	—	4⅛	3⅞	—	23	4¼	4⅛	3¾	—
8	4¾	4¼	—	—	24	4⅝	4⅛	3⅝	—
9	4⅜	4¼	3⅞	—	25	—	—	3¾	—
10	4⅝	4¼	3⅞	—	26	—	4¼	3¾	—
11	4⅝	—	3⅞	—	27	—	4⅛	3¾	—
12	4¾	4¼	3⅞	—	28	—	4⅛	3⅞	—
13	4⅝	4¼	3⅞	—	29	4¼	4	—	—
14	—	4¼	3⅞	—	30	4⅛	4	—	—
15	4¼	4¼	—	—	31	4¼	3⅞	—	—
16	4⅝	4¼	3⅞	—					

Average Monthly Price Per Pound

Month	1929 Pence	1930 Pence	1931 Pence	Month	1929 Pence	1930 Pence	1931 Pence
Jan.	9.942	7.471	4.160	Aug.	10.505	4.880	
Feb.	11.875	7.948	3.823	Sept.	10.160	4.075	
Mar.	12.135	7.595		Oct.	9.620	4.023	
Apr.	10.490	7.391		Nov.	8.442	4.440	
May	10.717	6.926		Dec.	7.958	4.516	
June	10.580	6.195		Average for Year	10.291	5.926	
July	11.065	5.648					

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Feb.	Mar.	Day of Month	Feb.	Mar.	Day of Month	Feb.	Mar.
1	——	——	11	11.00	——	21	11.05	——
2	10.45	11.20	12	——	——	22	——	——
3	10.50	11.20	13	11.00	——	23	——	——
4	10.65	——	14	10.95	——	24	11.35	——
5	10.80	——	15	——	——	25	11.30	——
6	10.75	——	16	10.95	——	26	11.25	——
7	10.70	——	17	11.05	——	27	11.15	——
8	——	——	18	11.25	——	28	11.20	——
9	10.70	——	19	11.20	——	29	——	——
10	10.90	——	20	11.00	——	30	——	——
						31	——	——

Average Monthly Price Per Pound

Month	1929 Cents	1930 Cents	1931 Cents	Month	1929 Cents	1930 Cents	1931 Cents
Jan.	20.22	17.21	10.27	Aug.	18.62	12.08	
Feb.	20.21	15.62	10.96	Sept.	18.83	10.85	
Mar.	20.19	15.13		Oct.	18.46	10.63	
Apr.	20.29	16.39		Nov.	17.53	10.96	
May	19.41	16.43		Dec.	17.28	10.02	
June	18.74	14.48		Average for Year	19.03	13.57	
July	18.62	13.10					

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1929	ON HAND 1930	ON HAND 1931	AFLOAT 1929	AFLOAT 1930	AFLOAT 1931	ON HAND AND AFLOAT 1929	ON HAND AND AFLOAT 1930	ON HAND AND AFLOAT 1931
Jan.	76,342	126,068	209,487	93,330	65,483	56,187	169,672	191,551	265,674
Feb.	90,058	134,790	.....	75,790	71,015	.....	165,848	205,805	.....
Mar.	100,536	141,843	.....	67,065	63,646	.....	167,601	205,489	.....
Apr.	107,659	143,272	.....	65,793	63,261	.....	173,457	211,533	.....
May	97,192	146,179	.....	65,793	68,168	.....	162,985	214,347	.....
June	92,061	151,485	.....	54,668	58,657	.....	146,729	210,142	.....
July	92,535	152,001	.....	46,145	58,326	.....	138,680	210,327	.....
Aug.	90,769	158,178	.....	49,423	61,168	.....	140,192	219,346	.....
Sept.	84,362	169,607	.....	58,758	60,923	.....	143,120	230,530	.....
Oct.	88,483	184,701	.....	59,180	51,122	.....	147,663	235,823	.....
Nov.	92,219	189,925	.....	62,358	52,538	.....	154,577	242,463	.....
Dec.	118,609	203,221	.....	62,388	56,035	.....	180,997	259,256	.....

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1928	1929	1930	At end of	1928	1929	1930
Jan.	66,524	25,191	60,434	July	35,429	30,080	81,048
Feb.	62,964	25,554	64,557	Aug.	32,084	35,605	80,931
Mar.	58,272	28,214	68,925	Sept.	31,440	42,188	83,329
Apr.	53,425	31,368	74,676	Oct.	24,207	47,803	77,647
May	44,628	31,290	77,312	Nov.	17,775	52,454	76,887
June	38,756	31,025	80,260	Dec.	19,815	54,304	78,013

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1930					
October	81,544	82,245	83,102	82,218	
November	77,480	75,159	76,042	76,448	76,670
December	76,877	77,493	77,460	77,328	
1931					
January	78,042	78,761	79,261	80,194	81,039
February	81,183	81,432	82,111	82,185	

Stocks in Liverpool

1930				
October	36,378	37,244	37,211	38,345	
November	38,941	39,336	40,003	40,492	39,933
December	40,349	40,281	40,300	40,593	
1931					
January	41,516	41,814	42,270	42,171	43,463
February	43,293	43,679	44,555	44,776	

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1928	1929	1930	End of	1928	1929	1930
Jan.	25,868	29,617	39,727	July	18,663	33,859	45,459
Feb.	22,867	32,373	44,371	Aug.	18,971	30,834	48,132
Mar.	20,538	29,437	45,657	Sept.	14,898	32,138	44,015
Apr.	16,946	26,474	48,473	Oct.	12,149	33,770	39,930
May	17,437	30,764	44,715	Nov.	29,188	30,963	41,674
June	18,207	30,403	42,451	Dec.	32,895	35,548	45,963

STOCKS IN OTHER CENTRES

1930 End of	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Feb.	41,955	28,180	2,159	5,000	4,370
Mar.	39,206	27,510	2,220	4,759	4,578
Apr.	39,758	28,580	2,204	4,000	4,482
May	26,482	22,730	2,308	4,000	4,388
June	36,578	20,920	2,314	3,856	4,588
July	38,311	27,290	2,312	4,500	4,665
Aug.	39,482	30,310	2,196	5,200	4,489
Sept.	39,863	31,000	2,343	5,834	4,854
Oct.	38,587	27,630	2,378	5,600	5,156
Nov.	40,551	24,220	2,405	5,400	4,535
Dec.	40,919	25,980	2,569	5,189	5,132
1931:					
Jan.	41,620				5,124

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,863,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.3
1926	24,199,524	78.8	1930	17,364,096	80.1
1930			1931		
July	1,449,161	80.7	January	681,301	67.9
August	1,504,187	78.1	February		
September	1,052,109	80.2	March		
October	863,579	73.3	April		
November	920,435	72.2	May		
December	567,355	69.1	June		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944	68,726
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296	69,395
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624	11,838

Figures for Recent Months

	PRODUCTION 1928	1929	1930	SHIPMENTS 1928	1929	1930	INVENTORY 1928	1929	1930
Jan.	5,358	6,301	4,485	5,394	6,211	4,406	9,949	12,855	11,924
Feb.	6,368	6,479	4,555	5,031	4,951	4,195	11,721	14,525	11,410
Mar.	6,819	7,049	4,863	5,731	6,289	4,717	12,389	15,329	12,513
Apr.	6,178	7,391	5,648	5,812	6,888	5,089	12,717	15,870	13,076
May	6,759	7,636	3,717	6,457	6,735	5,216	13,024	16,733	13,432
June	6,692	6,847	5,122	7,117	6,800	5,294	12,162	16,497	13,277
July	6,498	6,320	3,991	7,895	7,364	5,447	11,157	15,034	11,812
Aug.	7,469	5,693	4,166	8,403	7,354	5,175	10,034	13,337	10,848
Sept.	6,802	4,460	3,365	7,145	5,623	4,405	9,705	12,070	9,812
Oct.	7,326	4,611	3,582	5,717	4,649	3,499	11,520	12,042	9,803
Nov.	6,075	3,378	2,654	4,998	3,355	2,834	12,579	12,127	9,595
Dec.	5,605	3,057	2,814	4,591	3,237	3,361	13,624	11,838	9,003

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	50,850	60,116	70,706	82,614	76,618	70,822	80,180	68,829
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127	70,592
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117	12,807

Figures for Recent Months

	PRODUCTION 1928	1929	1930	SHIPMENTS 1928	1929	1930	INVENTORY 1928	1929	1930
Jan.	5,441	6,109	4,607	6,072	6,789	4,857	12,982	14,424	12,704
Feb.	6,895	6,346	4,634	5,431	4,948	4,337	14,650	15,936	13,036
Mar.	6,231	7,000	4,941	5,731	6,317	4,727	15,573	16,641	13,179
Apr.	6,661	7,157	5,510	5,702	6,716	4,848	16,638	17,000	13,784
May	7,168	7,181	5,535	6,300	6,598	5,074	17,702	17,745	13,852
June	6,953	6,542	4,950	7,136	6,515	5,265	17,159	17,294	13,612
July	6,674	5,793	3,939	8,729	7,605	5,855	14,974	15,311	11,657
Aug.	8,343	5,481	4,796	9,350	7,672	5,762	13,931	13,072	10,737
Sept.	7,103	5,190	3,817	7,154	5,859	4,541	13,543	12,585	10,065
Oct.	6,929	5,000	3,951	5,662	4,689	3,472	15,285	12,802	10,517
Nov.	5,592	3,544	2,680	5,002	3,480	2,788	15,743	12,845	10,313
Dec.	5,184	3,484	3,060	4,858	3,404	3,412	16,117	12,807	9,999

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete beginning with 1929, and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	Passenger Cars	Trucks	Canada Total	Passenger Cars	Trucks	Grand Total
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,002	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,850	32,556	3,573,313
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.	380,011	321,195	58,816	14,523	8,975	5,548	394,534
Nov.	217,570	170,928	46,642	9,424	7,137	2,287	226,994
Dec.	119,950	92,717	27,233	5,495	4,426	1,069	125,445
TOTAL	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930							
Jan.	273,089	235,099	37,990	10,388	8,856	1,532	283,477
Feb.	346,940	297,483	49,457	15,548	13,021	2,527	362,488
March	401,378	336,178	64,200	20,730	17,165	3,565	422,108
April	442,630	375,171	67,459	24,257	20,872	3,385	466,887
May	417,154	362,784	54,370	24,672	21,251	3,421	441,826
June	335,475	289,704	45,771	15,090	12,194	2,896	350,565
July	262,363	222,700	39,663	10,188	8,556	1,632	272,551
Aug.	223,045	187,288	35,758	9,792	6,946	2,846	232,838
Sept.	216,877	175,720	41,157	7,957	5,623	2,334	224,834
Oct.	150,044	112,800	37,244	4,541	3,206	1,335	154,585
Nov.	135,752	102,957	32,795	5,407	3,527	1,880	141,159
Dec.	155,601	124,070	31,531	5,622	4,225	1,397	161,223
Total	3,354,977	2,814,453	540,525	154,192	125,442	28,750	3,509,169
1931							
Jan.	171,903	140,326	31,577	6,496	4,552	1,944	178,399
Feb.							
Mar.							
Apr.							
May							
June							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[4]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[5]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,528
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	43,960	15,593	28,367	5,723	800	966	548	453	6,264	6,961	13,437	1,059	1,922	733	67,233
June	40,398	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,693	11,270	757	1,398	548	61,017
July	46,454	15,071	31,383	5,457	974	1,247	641	462	6,422	7,192	13,995	575	1,457	543	70,348
Aug.	50,441	15,469	34,972	6,079	685	993	641	431	4,644	7,298	10,782	1,082	1,563	499	69,619
Sept.	53,484	12,392	41,092	7,993	884	832	640	406	4,708	7,517	10,149	655	1,566	504	76,446
Oct.	47,987	12,516	35,421	8,381	812	1,047	671	485	4,697	8,295	10,512	893	1,606	445	73,265
Nov.	46,279	11,204	35,075	6,660	1,065	668	672	278	4,760	6,711	9,380	771	1,442	535	68,017
Dec.	46,147	15,018	31,129	8,683	900	950	672	320	5,189	8,279	11,102	966	1,674	443	70,287
1930:															
Jan.	52,535	11,773	40,762	7,741	1,560	791	642	386	5,709	7,831	8,928	856	1,837	585	77,628
Feb.	48,947	12,960	35,987	8,055	1,245	847	642	469	6,900	7,191	11,414	944	1,787	480	75,961
Mar.	47,320	12,236	34,084	6,617	1,129	976	642	391	5,796	6,612	11,214	643	1,674	536	70,314
Apr.	43,803	14,627	29,176	4,444	856	1,026	502	366	4,802	6,326	12,724	433	1,201	630	62,486
May	49,016	13,253	35,763	5,968	975	917	502	350	6,352	6,661	12,041	753	1,383	555	72,220
June	36,607	12,120	24,487	4,577	778	1,040	201	392	4,728	4,776	9,512	425	974	551	52,441
July	41,347	12,759	28,588	3,868	792	1,087	600	327	6,022	5,891	9,770	648	810	418	58,821
Aug.	47,802	10,304	37,498	7,077	600	740	600	335	5,892	7,197	9,520	394	809	382	71,134
Sept.	48,529	8,087	40,442	7,966	343	680	600	289	5,960	6,358	7,302	527	1,093	474	72,034
Oct.	47,770	7,312	40,458	7,681	591	598	650	300	5,916	6,956	6,352	667	669	449	71,287
Nov.	41,281	7,774	33,507	6,042	864	631	600*	311	5,334	6,401	8,001	654	658	288	63,241
Dec.	42,086	9,671	32,415	6,934	1,049	976	600*	335	6,264	7,196	8,476	721	1,365	353	66,674
1931:															
Jan.	41,579	11,029	30,554	6,751	.....	770	600*	424	5,923	7,348	10,328	914	994	.....	.....

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, and 2,670 in 1929. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, and 1,302 tons in 1929. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	288,407	42,671	17,685	5,584	6,895	9,758	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,899
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,012
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,178	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,881	12,018	9,490	6,482	636	4,224	2,055	2,672	632,808
1928	407,572	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,015
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,270
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,520	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,478
May	48,475	5,112	3,152	3,682	2,937	2,314	1,417	996	1,437	854	201	468	37	277	71,359
June	38,821	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	520	65,882
July	41,114	4,993	4,839	3,559	3,205	2,388	2,023	1,056	2,918	1,039	253	519	30	465	68,401
Aug.	35,397	14,594	4,645	4,082	2,879	3,663	908	1,234	724	902	254	429	25	319	70,055
Sept.	32,912	17,010	3,889	4,691	1,908	3,511	1,224	1,235	853	672	258	361	91	477	68,453
Oct.	36,040	16,111	4,489	3,355	1,821	3,902	1,838	1,073	1,125	1,147	278	710	91	201	72,181
Nov.	41,097	13,141	3,082	3,776	2,709	3,221	1,275	1,226	1,453	361	253	595	62	313	72,564
Dec.	40,588	12,434	4,274	2,921	2,114	2,251	1,198	1,200	726	741	52	677	90	443	69,709
1930:															
Jan.	44,911	11,106	4,207	3,862	2,842	2,805	910	826	332	612	209	552	200*	577	73,949
Feb.	40,792	10,293	4,482	3,697	2,250	1,886	1,385	2,705	457	1,143	188	315	200*	239	69,533
Mar.	42,216	12,346	4,354	4,289	3,776	2,663	1,088	1,153	975	678	358	322	200*	263	74,676
Apr.	43,036	13,058	5,006	4,488	2,303	2,769	2,067	929	673	1,431	153	461	200*	255	76,790
May	40,012	9,861	5,233	4,379	2,593	2,699	1,279	1,645	64	1,250	230	274	200*	282	65,620
June	37,374	9,645	4,458	3,794	2,579	2,677	1,378	1,574	67	691	343	507	200*	282	65,620
July	32,785	7,650	3,511	3,449	3,347	1,206	587	567	84	939	172	756	200*	342	55,395
Aug.	34,513	8,369	3,953	3,515	2,108	2,170	886	149	265	888	87	747	200*	450	58,250
Sept.	34,373	16,015	5,285	4,089	1,578	2,606	1,279	1,373	414	824	221	817	200*	411	69,485
Oct.	44,385	9,095	7,403	3,747	1,942	3,951	2,460	2,782	609	769	439	1,132	200*	351	79,265
Nov.	28,437	—250	13,662	3,074	2,128	4,003	2,510	2,140	464	596	364	1,180	200*	343	58,851
Dec.	35,202	12,249	7,149	3,105	1,347	4,104	2,815	544		814	205	647	200*		
1931:															
Jan.	34,892														

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are included in this compilation. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics	Rubber Heels	Rubber Soles	Mechanical Goods Shipments
	Yards	Pairs	Pairs	Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620(2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1929:				
December	2,291,000	14,781,000	3,003,000	4,751,000
1930:				
January	3,281,000	15,470,000	3,496,000	5,169,000
February	3,441,000	14,172,000	2,238,000	5,376,000
March	3,570,000	15,439,000	2,582,000	5,981,000
April	4,029,000	17,762,000	2,593,000	5,989,000
May	3,597,000	15,603,000	1,939,000	6,163,000
June	3,279,000	15,795,000	2,734,000	5,218,000
July	2,940,000	15,117,000	2,663,000	4,910,000
August	3,458,000	13,735,000	1,473,000	4,552,000
September	5,046,000	14,322,000	2,193,000	4,083,000
October	5,209,000	16,460,000	3,056,000	4,186,000
November	2,822,000	11,083,000	1,426,000	3,400,000

(1) Not available; (2) Last 9 months only.

Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Liquid Latex (1)	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	—	—
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	—	—
1921	58	26,945	814	1,077,859	1,745	851,893	—	—
1922	127	57,040	812	978,765	2,335	403,812	—	—
1923	1,155	542,227	709	898,524	4,565	853,308	—	—
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,218	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	781	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1930:								
Feb.	75	25,956	52	45,319	367	93,087	311	153,848
Mar.	148	50,007	16	12,498	522	128,844	279	107,847
Apr.	75	19,856	58	54,548	410	103,089	226	98,239
May	172	57,760	17	13,645	602	144,415	749	242,385
June	168	51,561	52	47,000	532	120,424	389	129,368
July	93	26,000	24	17,463	45	102,325	242	78,688
Aug.	50	14,000	11	5,600	768	168,511	944	253,127
Sept.	100	28,000	45	39,512	486	86,664	402	127,751
Oct.	64	18,527	36	30,702	490	113,638	306	99,637
Nov.	—	—	73	61,650	389	84,219	332	65,265
Dec.	—	—	90	66,198	429	116,644	70	20,481
1931:								
Jan.	—	—	46	31,870	355	58,897	291	70,708

(1) Latex import figures not available before 1924.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

		Consumption					Consumption			
Year	Production	Tons	% to Crude	Stocks*	Year	Production	Tons	% to Crude	Stocks*
1920	86,895	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,829	47.7	23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,867	46.7	22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,899	22,435	47.3	20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1	19,479	Nov.	14,363	15,330	55.4	26,080
June	18,416	18,141	42.0	17,980	Dec.	13,429	11,531	49.0	27,464
1930:									
Jan.	15,010	17,454	47.6	24,241	July	12,322	12,384	42.3	23,873
Feb.	15,846	14,559	44.5	24,243	Aug.	12,047	10,985	35.9	22,980
Mar.	17,400	15,241	42.2	24,415	Sept.	11,433	10,480	41.4	21,996
Apr.	17,828	16,904	42.0	24,587	Oct.	12,349	10,724	39.3	21,145
May	17,812	17,052	42.7	23,856	Nov.	10,763	8,816	37.5	24,007
June	15,714	14,068	40.8	24,449	Dec.	10,073	8,449	39.3	24,008
1931:									
Jan.	10,349	10,728	37.6	22,429	July	.....	.....	.....	.....
Feb.	.....	.....	.....	.....	Aug.	.....	.....	.....	.....
Mar.	.....	.....	.....	.....	Sept.	.....	.....	.....	.....
Apr.	.....	.....	.....	.....	Oct.	.....	.....	.....	.....
May	.....	.....	.....	.....	Nov.	.....	.....	.....	.....
June	.....	.....	.....	.....	Dec.	.....	.....	.....	.....

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.

(Rubber Manufacturers' Association figures raised to 100%)

REVIEW DESK

Books, New Publications, Catalogues, Etc.

THE HIGHWAY TO SUCCESS. By C. Harold Smith. Published by D. Appleton & Company, 35 West 32nd Street, New York City. 1931. 160 pp. $1.50.

Few successful industrial leaders have had the adventurous career that has marked the rise of Mr. Smith to the head of the Binney & Smith Company. Born in London, he went to the South Seas at the age of fifteen, worked his way to San Francisco and New York, settling down in the latter city to mount to a partnership in one of the principal carbon black producing organizations of the world. With such a background, he is peculiarly qualified to write the present volume, which, as he says, is intended "to help youth make its way in the world, to guide those who are on their way, and to amuse those who have won their way." Mr. Smith knows the difficulties that beset the path of any one who is forced to make good on his own in the business world, and he carefully outlines the avenues for enterprise and the attributes essential to success. Included are many amusing stories which are employed to illustrate the situation or problem discussed.

MARKETS FOR MACHINERY IN BRITISH MALAYA. By Don C. Bliss. Published by the United States Department of Commerce, Washington, D. C. 1931. $0.20.

The British Malayan market for machinery covers a wide range but principally centres in the rubber processing and tin mining industries. The United Kingdom is the chief source of the colony's machinery imports, with the exception of power-generating and printing machinery. During the last five years, total machinery imports into British Malaya have averaged around $10,000,000, of which the United Kingdom accounted for about 60 per cent, European countries about 30 per cent and the United States 10 per cent. Mr. Bliss, American trade commissioner at Singapore, recently completed a comprehensive survey of the British Malayan market for rubber processing and other machinery, the results of which are embodied in this bulletin.

NOTES ON THE CARBON-BLACK FLAME. By W. B. Wiegand. Published by the Binney & Smith Company, 41 East 42nd Street, New York City. 1931. 10 pp. For free distribution.

The basic difference between carbon black and lamp black is defined in terms of the method of collection in this paper, which was originally read before the Rubber Division of the American Chemical Society at last September's meeting in Cincinnati. Possible causes of the unique properties of impingement black are discussed. By reference to two types of carbon black flames—round and flat—the conception of "combustion quotient" is developed and applied to variations in flame size and shape, and to drafting. The position of the impingement surface, the effect of flame shape, of gas flow, and of position of channel are briefly discussed in relation to the quality and quantity of black obtained. Factors of importance in large scale operations are mentioned.

BROWN ELECTRIC CO_2 METERS. Published by the Brown Instrument Company, Wayne and Roberts Avenues, Philadelphia, Pa. 1931. 32 pp. For free distribution.

The operation of furnaces, whether under boilers, or otherwise, involves needless waste in many plants due to poor adjustment of air supply. When conditions of air supply are just right, the amount of carbon dioxide contained in the stack gases will be at a maximum. By having an instrument that indicates or records the percentage of carbon dioxide present in the flue gases, therefore, the furnace operator is enabled to run his furnace economically from the standpoint of fuel saving. The meters described in this handsomely illustrated catalogue check the percentage of carbon dioxide in the flue gas, the gas after being cleaned and dried entering a "comparison cell" where the carbon dioxide content causes an electrically heated coil to get hotter, increasing its electrical resistance, which in turn affects a galvanometer in the connected instrument, causing the latter to indicate or record the actual percentage of carbon dioxide present.

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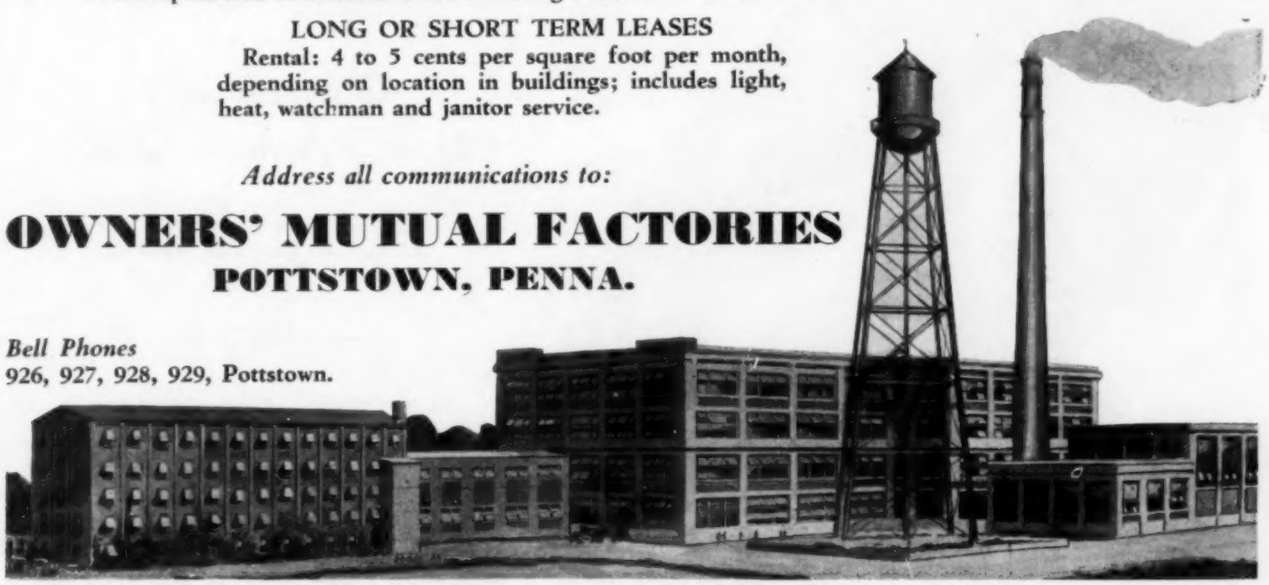

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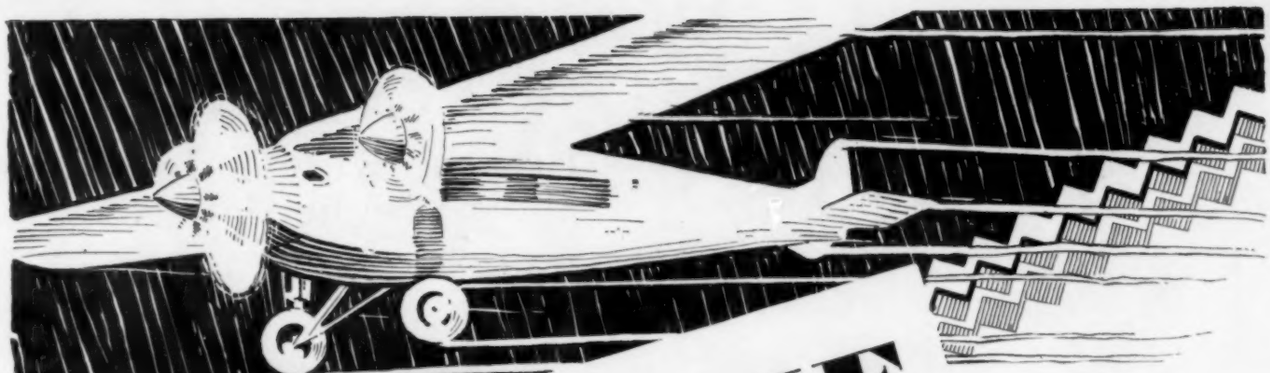

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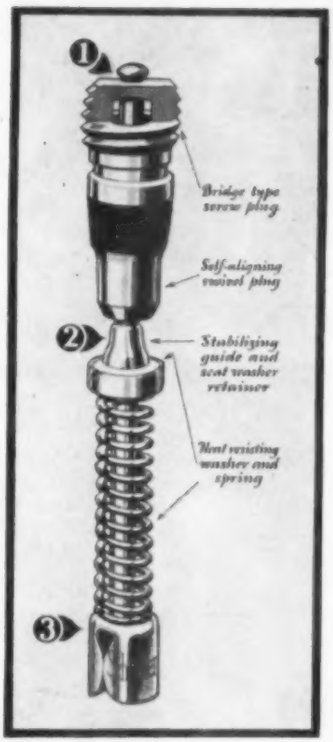

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More rugged
Inflates faster
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Why a new core?

Busses and trucks with heavy pneumatic tires have brought new problems into the tire industry; greater loads at continual high speeds develop unusual conditions and generate excessive heat. Nearly two years ago Schrader developed for this purpose a special new valve core, which has triumphantly met the final test of the hardest kind of daily use. This new "Cair-Free" core is being used increasingly by tire manufacturers as standard equipment to meet similar demands in passenger automobiles. It is now offered to the replacement trade. For you it means:

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"CAIR FREE" on Cellophane - wrapped box identifies the new special Schrader Valve Core package.

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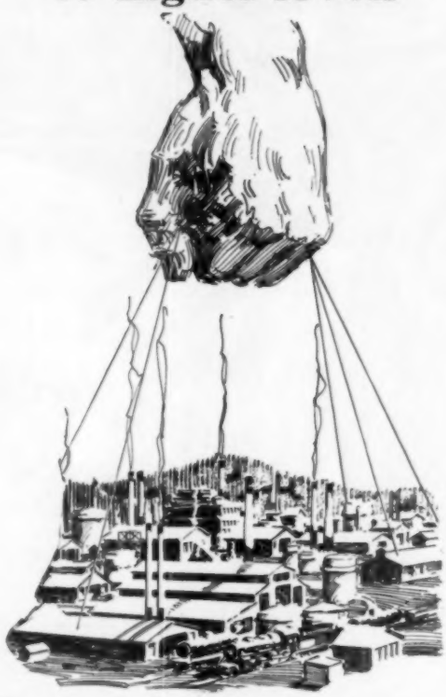
raises the Rubber Industries to higher levels



CHEMISTRY and Chemical Engineering are keeping many rubber and rubber products plants out of the red, can do the same for many others, will do it for all who know how to utilize these great forces.

Every man responsible for methods, materials, machinery, processing efficiency, product quality and sales promotion in any branch of the rubber industry, owes it to himself, his profession, his employers and his Country to maintain that leadership necessary to prosperity via Chemistry and the allied sciences.

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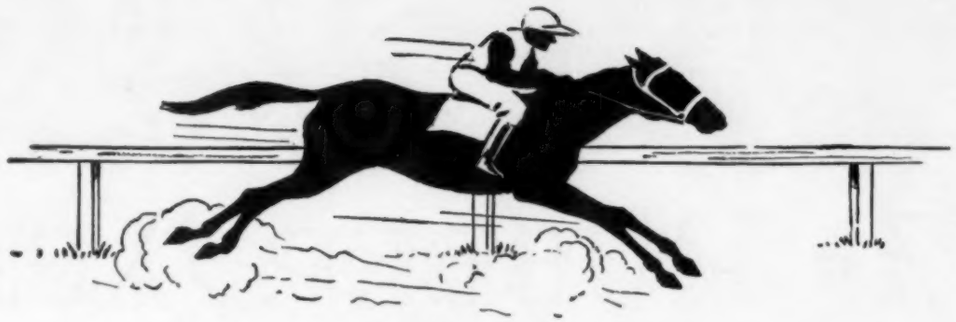

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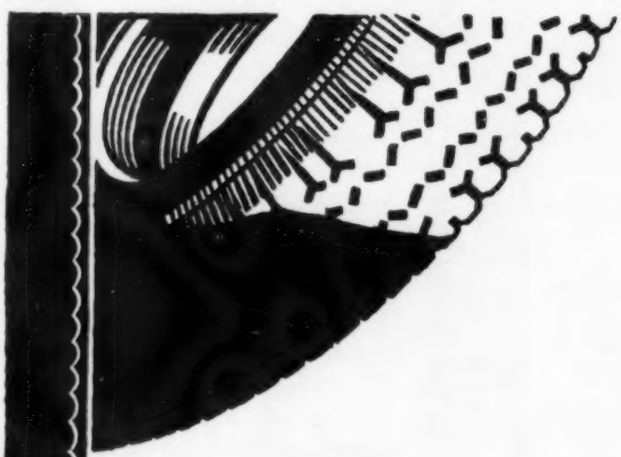

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AS a neutral resin for use in rubber compounding, Cumar is unrivalled. Years of research and development stand back of Cumar, and the product has unusual resistance to water, acid and alkali. The Barrett technical staff is at your service to assist you. Phone, wire or write.

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Barrett Standard
CHEMICALS
for the Rubber Industry

The RUBBER AGE

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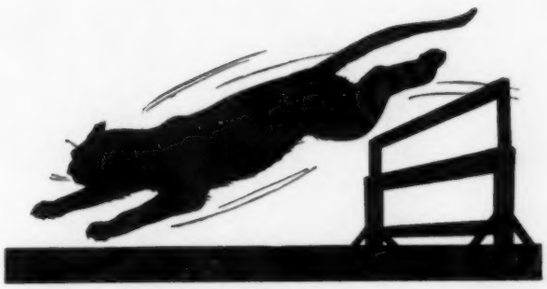
Rubber Chemistry

THE rubber chemists and technologists within the industry are yearly expanding their activities of research and development to a point where today practically every phase of the manufacturers' problems is being covered by their investigations. A glance at the program of the Rubber Division of the American Chemical Society, scheduled for the Indianapolis meeting on April 1-2, shows the variety of the problems which are being attacked. Abstracts of the papers to be presented are featured in this issue of THE RUBBER AGE, together with abstracts of the papers recently presented before the New York and Boston local groups.



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